SETTLEMENTS, RESOURCE-USE AND PATTERNS OF COMMUNICATION IN EARLY INDIA (c. 200 B.C. -750 A.D.)

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DOCTOR OF PHILOSOPHY

By

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CERTIFICATE

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CONTENTS

Page no.

Acknowledgements

List of Abbreviations i

List of charts ii

List of maps iv

CHAPTER 1 INTRODUCTION 1

CHAPTER 2 EARLY INDIA FROM THE NORTHWEST TILL ORISSA c. 200 B.C.- 300 A.D. 19

CHAPTER 3 EARLY INDIA FROM CENTRAL INDIA TILL KERALA c. 200 B.C. – 300 A.D. 97

CHAPTER 4 PERIOD OF THE GUPTAS AND OTHER CONTEMPORARY RULERS c. 300-500 A.D. 162

CHAPTER 5 THE POST-GUPTA PERIOD c. 500-750 A.D. 253

CHAPTER 6 SUMMARY AND CONCLUSION 335

NOTES TO CHARTS- CHAPTER 2 394

NOTES TO CHARTS- CHAPTER 3 398

NOTES TO CHARTS- CHAPTER 4 401

NOTES TO CHARTS- CHAPTER 5 406

REFERENCES 409

ABBREVIATIONS

ARASI	Annual Report of the Archaeological Survey of India
AP	Ancient Pakistan
CII	Corpus of Inscriptions Indicarum
IESHR	Indian Economic and Social History Review
IHQ	Indian Historical Review
JNSI	Journal o the Numismatic Society of India
SAA	South Asian Archaeology
SAS	South Asian Studies
PA	Pakistan Archaeology
ME	Man and Environment
NWFP	North West Frontier Province
NBPW	Northern Black Polished Ware
BDCRI	Bulletin of the Deccan College Research Institute
IGI	Imperial Gazetteer of India
GSI	Geological Survey of India

LIST OF CHARTS

		Following Page no.
Chart 1a-	Potwar Plateau and NWFP-c.200 B.C.--300 A.D.	19
Chart 2a-	Jammu and Kashmir-c.200 B.C. --300 A.D.	34
Chart 3a-	Sindh- c.200 B.C. --300 A.D.	38
Chart 3.1a	Multan- c. 200 B.C.—300 A.D.	41
Chart 4a-	Baluchistan- c.200 B.C. --300 A.D.	43
Chart 5a-	Uttarakhand and Himachal Pradesh- c.200 B.C. --300 A.D.	46
Chart 6a-	Indo-Gangetic divide and the Punjab Plains- c.200 B.C. --300 A.D.	51
Chart 7a-	Upper Gangetic plains- c.200 B.C. --300 A.D.	57
Chart 8a-	Middle Gangetic plains- c.200 B.C. --300 A.D.	65
Chart 9a-	Lower Gangetic plains and the Chotanagpur Plateau - c.200 B.C. --300 A.D.	78
Chart 10a-	Northeast India- c.200 B.C.--300 A.D.	88
Chart 11a-	Orissa- c.200 B.C. --300 A.D.	90
Chart 12a-	Central India- c.200 B.C. --300 A.D.	97
Chart 13a-	Rajasthan- c.200 B.C. --300 A.D.	106
Chart 14a-	Gujarat- c.200 B.C. --300 A.D.	112
Chart 15a-	Maharashtra- c.200 B.C. --300 A.D.	118
Chart 16a-	Andhra Pradesh- c.200 B.C. --300 A.D.	128
Chart 17a-	Andhra Coast- c.200 B.C. --300 A.D.	135
Chart 18a-	Karnataka- c.200 B.C. --300 A.D.	141
Chart 19a-	Tamil Nadu- c.200 B.C. --300 A.D.	149
Chart 20a-	Kerala- c.200 B.C. --300 A.D.	157
Chart 1b-	Potwar Plateau and NWFP-c.300 -500 A.D	162
Chart 2b-	Jammu and Kashmir-c.300 -500 A.D.	170
Chart 3b-	Sindh- c.300-500 A.D.	173
Chart 4b-	Multan- c.300 -500 A.D.	175
Chart 5b-	Indo-Gangetic divide and the Punjab Plains- c.300-500 A.D.	179
Chart 6b-	Upper Gangetic plains- c.300-500 A.D.	184

Chart 7b-	Middle Gangetic plains- c.300-500 A.D.	190
Chart 8b-	Lower Gangetic plains and the Chotanagpur Plateau - c.300-500 A.D.	198
Chart 9b-	Northeast India- c.300-500 A.D.	204
Chart 10b-	Orissa- c.300-500 A.D.	208
Chart 11b-	Central India- c.300-500 A.D.	213
Chart 12b-	Rajasthan- c.300-500 A.D.	219
Chart 13b-	Gujarat- c.300-500 A.D.	223
Chart 14b-	Maharashtra- c.300-500 A.D.	225
Chart 15b-	Andhra Pradesh- c.300-500 A.D.	233
Chart 16b-	Andhra Coast- c.300-500 A.D.	237
Chart 17b-	Karnataka- c.300-500 A.D.	241
Chart 18b-	Tamil Nadu- c.300-500 A.D.	245
Chart 1c-	Potwar Plateau and NWFP-c.500-750 A.D.	253
Chart 2c-	Jammu and Kashmir-c.500-750 A.D.	257
Chart 3c-	Sindh, Multan- c.500-750 A.D.	260
Chart 4c-	Uttarakhand and Himachal Pradesh- c.500-750 A.D.	263
Chart 5c-	Indo-Gangetic divide and the Punjab Plains- c.500-750 A.D.	266
Chart 6c-	Upper Gangetic plains- c.500-750 A.D.	268
Chart 7c-	Middle Gangetic plains- c.500-750 A.D.	269
Chart 8c-	Lower Gangetic plains and the Chotanagpur Plateau - c.500-750 A.D.	278
Chart 9c-	Northeast India- c.500-750 A.D.	285
Chart 10c-	Orissa- c.500-750 A.D.	289
Chart 11c-	Gujarat - c.500-750 A.D.	293
Chart 12c-	Rajasthan- c.500-750 A.D.	300
Chart 13c-	Maharashtra - c.500-750 A.D.	303
Chart 14c-	Central India - c.500-750 A.D.	308
Chart 15c-	Andhra Pradesh- c.500-750 A.D.	315
Chart 16c-	Andhra Coast- c.500-750 A.D.	319
Chart 17c-	Karnataka- c.500-750 A.D.	323
Chart 18c-	Tamil Nadu- c.500-750A.D.	327

LIST OF MAPS

		Following Page No.
Map-1-	Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh- c.200 BC-300 AD.	19
Map-2-	Sitewise distribution of raw materials in Jammu and Kashmir c.200 BC-300 AD.	34
Map-3-	Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh c.200 BC-300 AD.	38
Map-3.1	Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh c.200 BC-300 AD.	41
Map-4-	Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh c.200 BC-300 AD.	43
Map-5-	Sitewise distribution of raw materials in Uttarakhand and Himachal Pradesh c.200 BC-300 AD.	46
Map-6-	Sitewise distribution of raw materials in Indo-Gangetic Divide and Punjab Plains c.200 BC-300 AD	51
Map-7-	Sitewise distribution of raw materials in Upper Gangetic plains c.200 BC-300 AD.	57
Map-8-	Sitewise distribution of raw materials in Middle Gangetic plains c.200 BC-300 AD.	65
Map-9-	Sitewise distribution of raw materials in Lower Gangetic plains and Chotanagpur Plateau c.200 BC-300 AD	78
Map-10-	Sitewise distribution of raw materials in Northeast India c.200 BC -300 AD.	88
Map-11-	Sitewise distribution of raw materials in Orissa c.200 BC-300 AD	90
Map-12-	Sitewise distribution of raw materials in Central India c.200 BC-300	97

Map-13- Sitewise distribution of raw materials in Rajasthan and Gujarat c.200 BC-300 AD 106

Map-14- Sitewise distribution of raw materials in Rajasthan and Gujarat c.200 BC-300 AD 112

Map-15- Sitewise distribution of raw materials in Maharashtra region c.200 BC -300 AD 118

Map-16- Sitewise distribution of raw materials in Andhra and Andhra Coast c.200 BC-300 AD 128

Map-17- Sitewise distribution of raw materials in Andhra and Andhra Coast c.200 BC-300 AD 135

Map-18- Sitewise distribution of materials in Karnataka c.200 BC-300 AD 141

Map-19- Sitewise distribution of raw materials in Tamil Nadu and Kerala c.200 BC-300 AD 149

Map-20- Sitewise distribution of raw materials in Tamil Nadu and Kerala c.200 BC-300 AD 157

Map-21- Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh- c.300-500 AD 162

Map-22- Sitewise distribution of raw materials in Jammu and Kashmir c.300-500 AD 170

Map-23- Sitewise distribution of raw materials in NWFP, and Sindh c.300-500 AD 173

Map-24- Sitewise distribution of raw materials in NWFP, Sindh and Multan c.300-500 AD 175

Map-25- Sitewise distribution of raw materials in Indo-Gangetic Divide and Punjab Plains c.300 -500 AD 179

Map-26- Sitewise distribution of raw materials in Upper Gangetic plains c.300-500 AD 184

Map-27- Sitewise distribution of raw materials in Middle Gangetic plains c.300- 500 AD 190
Map-28- Sitewise distribution of raw materials in Lower Gangetic plains and Chotanagpur Plateau c.300-500 AD 198
Map-29- Sitewise distribution of raw materials in Northeast India c.300-500 AD 204
Map-30- Sitewise distribution of raw materials in Orissa c.300-500 AD 208
Map-31- Sitewise distribution of raw materials in Central India c.300-500 AD 213
Map-32- Sitewise distribution of raw materials in Rajasthan and Gujarat c.300-500 AD 219
Map-33- Sitewise distribution of raw materials in Rajasthan and Gujarat c.300-500 AD 223
Map-34- Sitewise distribution of raw materials in Maharashtra region c.300-500 AD 225
Map-35- Sitewise distribution of raw materials in Andhra and Andhra Coast c.300-500 AD 233
Map-36- Sitewise distribution of raw materials in Andhra and Andhra Coast c.300-500 AD 237
Map-37- Sitewise distribution of materials in Karnataka c.300-500 AD 241
Map-38- Sitewise distribution of raw materials in Tamil Nadu and Kerala c.300-500 AD 245
Map-39- Sitewise distribution of raw materials in Tamil Nadu and Kerala c.300-500 AD 251
Map-40- Sitewise distribution of raw materials in NWFP, Baluchistan and Sindh- c.500-750 AD 253
Map-41- Sitewise distribution of raw materials in Jammu and Kashmir c.500-750 AD 257

Map-42- Sitewise distribution of raw materials in NWFP, Sindh and Multan c.500-750 AD 260
Map-43- Sitewise distribution of raw materials in Uttarakhand and Himachal Pradesh c.500-750 AD 263
Map-44- Sitewise distribution of raw materials in Indo-Gangetic Divide and Punjab Plains c.500-750 AD 266
Map-45- Sitewise distribution of raw materials in Upper Gangetic plains c.500-750 AD 268
Map-46- Sitewise distribution of raw materials in Middle Gangetic plains c.500-750 AD 269
Map-47- Sitewise distribution of raw materials in Lower Gangetic plains and Chotanagpur Plateau c.500-750 AD 278
Map-48- Sitewise distribution of raw materials in Northeast India c.500-750 AD 285
Map-49- Sitewise distribution of raw materials in Orissa c.500-750 AD 289
Map-50- Sitewise distribution of raw materials in Rajasthan and Gujarat c.500-750 AD 293
Map-51- Sitewise distribution of raw materials in Rajasthan and Gujarat c.500-750 AD 300
Map-52- Sitewise distribution of raw materials in Maharashtra region c.500-750 AD 303
Map-53- Sitewise distribution of raw materials in Central India c.500-750 AD 308
Map-54- Sitewise distribution of raw materials in Andhra and Andhra Coast c.500-750 AD 315
Map-55- Sitewise distribution of raw materials in Andhra and Andhra Coast c.500-750 AD 319

Map-56- Sitewise distribution of materials in Karnataka c.500-750 AD 323
Map-57- Sitewise distribution of raw materials in Tamil Nadu and Kerala c.500-750 AD 327
Map-58- Sitewise distribution of raw materials in Tamil Nadu and Kerala c. 500-750 AD 333

CHAPTER 1

INTRODUCTION

This dissertation examines the resource-use and resource-access of settlements in early India so as to outline patterns of communication from the 2nd c. BC till about the 8th c. AD. It does this by mapping a range of raw materials – including precious and common metals, varieties of semi-precious and ordinary stone, shell and ivory – that were used at different sites. The evidence is mainly in the form of manufactured objects and, occasionally, evidence of manufacture of such objects there. Additionally, the sites have been analyzed in terms of their structural remains and have been categorized into urban, religious and other kinds of settlements. All this evidence is then interwoven to understand the pattern of communication in historical India.

PREVIOUS WORK ON RESOURCE-USE AND ACCESS, SETTLEMENTS AND PATTERNS OF COMMUNICATION

Resource-use and Access

Studies on trade and commerce in ancient India began in the nineteenth century. However, research on the subject of trade in raw materials had been left largely untouched. The earliest systematic discussion on this was provided by a geologist of British India, a person called Sir Edwin Pascoe (1931:674-85) in a chapter 'Minerals and Metals'. This appeared in John Marshall's excavation report on Mohenjodaro (1931). Pascoe looked at the geological sources of the various raw materials used at that city, ranging from precious metals such as gold and silver to semi-precious stones such as agate, carnelian, lapis lazuli, crystal and jasper. He traced the natural sources of these raw materials both within the subcontinent and outside it as far as Siberia, China and Central Asia on one hand and Afghanistan, Persia, Syria and Asia Minor on the other. Furthermore, he demarcated the probable regions from where the ancient site of Mohenjodaro could have procured the raw materials.

Many decades later, another work of this kind for the proto-historic period was done by C.F. Jarrige and M. Tosi, with reference to proto-historic Afghanistan. Their findings appeared in the form of a paper called ' The Natural Resources of Mundigak-

Some Observations On The Location of the Site in Relation to Its Economic Space' in *South Asian Archaeology*, 1979 (ed. H. Hartel, 1981). A study on trade in raw materials and metals similar to the work of Pascoe has also been done by Shashi Asthana in 'Harappan Trade in Metals and Minerals: A Regional Approach', a chapter that she contributed to *Harappan Civilization: a Contemporary Perspective*, (Possehl 1982). Although the author did not mention Pascoe, the approach was the same.

As part of the research on trade in raw materials, attention to scientific studies which throw light on the issue of provenance of raw materials is crucial for tracing natural sources of raw materials. Presently, not enough studies have been done in this direction. The majority of studies based on raw material-artifact correlation have been done on metallic artifacts and ores. The correlation is made between the raw material and the finished product based on the similarity in the impurity patterns. Some of the early analysis in this direction was done by M.Sanaullah (1931) who worked on specimens of copper from Mohenjodaro in *Mohenjodaro and the Indus Civilization* by John Marshall (1931). He found four distinct varieties of copper and its alloys at Mohenjodaro consisting of crude copper, refined copper, copper-arsenic alloy and copper-tin alloy or bronze. He distinguished the Sumerian copper from the Harappan copper by the virtual absence of arsenic. The chemical similarities were found with ores from Khetri, Singhbhum and Afghanistan which contained nickel and arsenic. K.T.M. Hegde (1969) studied the copper metallurgy of the chalcolithic period. He compared the impurity patterns of Ahar artifacts and Khetri ore on the basis of spectroscopic analysis and found close parallels. In an earlier study of Kshatrapa silver coins, Hegde (1967) applied the spectrometric analysis and used the total impurity patterns from the coins and the ore samples to propose a correlation. Additionally, D.P. Agarwal in *the Copper-Bronze Age in India* (1971) provided a comprehensive analysis of copper ore sources. He also summarized the work done till date on chemical analysis of artifacts by different persons in India as well as abroad till that time. Agarwal analyzed one hundred and seventy seven artifacts from Mohenjodaro and Harappa. A close comparison of the impurity patterns on the basis of spectroscopic analysis of Harappan artifacts and various ores showed a close correspondence with the Khetri ores and therefore was seen as the most probable mining area of the Harappans. Bhardwaj (1979) worked on the copper objects from

Rajghat dated c.600-200 BC. He found most of the samples of pure copper with other impurities in traces. On the basis of spectrographic analysis it was concluded that the Rajghat copper objects were manufactured from the copper ores of Bihar.

Publication on iron technology in India has been done by scholars such as Niyogi (1914), Kosambi (1963), Banerjee (1965), and Chakrabarti (1973, 1992) among others. However, only a few studies have been focussed on the metallographic and chemical analysis of iron artifacts from the Indian subcontinent. These form part of the excavation report of Prakash in Dhulia district of Maharashtra (Athavale 1964-65). Athavale examined seven objects in all that showed presence of metallic iron by chemical analysis. Two metal samples were analyzed from Dhatva in Surat district of Gujarat by Hegde (1973). The data showed that the iron produced here was pure and comparable to present-day wrought iron. Hegde also found a similarity in the technology of iron smelting at the early historic site of Dhatva and present day Ghadi Loharias. Some iron samples at Atranjikhera in Etah district in Uttar Pradesh were studied by O.P.Agarwal (1983). The study showed that the metal was wrought iron with minute surface carburization during forging. Few other studies of the metallographic and chemical analysis of artifacts from excavation sites are iron samples from Rajghat (c.600-400 BC) by H.C. Bhardwaj (1973), three iron implements from megalithic Tadakanahalli in Karnataka (Agarwal 1980-1), a sickle like object from Barudih, Bihar by Ghosh and Chattopadhyay (1982), and chemical and metallographic studies of five iron samples from megaliths at Mahurijhari and Naikund (Gogte 1983).

A study by Rajni Nanda (1992) on *The Early History of Gold in India* is a compilation and integration of geological, archaeological and literary data on gold in a historical perspective. The work looks at various natural sources of gold (lodes and placer deposits) throughout India in a region-wise pattern. She then surveyed data on gold artifacts in its varied uses from archaeological sites dating from pre-Indus sites, to artifacts recovered from sites of the historical period. Interestingly, she has devoted a section on the techniques of manufacture of gold ornaments in proto historic and early historic India. The use of gold in early Indian coinage has also been looked into in a dynastic form as it evolved. The data on references to gold in the vast literary

pantheon from religious and secular literature demonstrates the elaborate nature of study focussing on a single metal. The conclusion draws attention to the wide distribution of natural sources of gold and its procurement by ancient miners and smelters. It is an exhaustive study on the use and significance of gold in the ancient Indian history.

Scientific study of metals like silver, lead and tin has been done as well. K.T. M. Hegde in Chemical and Spectrometric Studies in the Kshtrapa silver coins (1967:63-6) studied a few silver and lead coins of the Kshtrapa rulers. The analysis and spectrometric study of the fifteen Kshtrapa silver coins from Devnmori and lead coins indicated the possibility of linking the lead metal with Aravalli zinc blend galena ore deposit. Some additional elements of the ore samples were absent in the coins. This analysis indicated the possible import of silver by the Kshtrapas for minting coins. The Problem of Tin in Early India: A Preliminary Survey (1997: 348-63) by Dilip Chakrabarti is another study locating the nearest source of tin used by the Harappans at Mohenjodaro and Rangpur. The analysis of bronze artifacts indicated a possibility of obtaining tin from Khorasan and Samarkand area in the northwest as the nearest source of tin outside India.

A few other works have focussed on resource-use and resource-access and highlighted the importance of scientific analysis of artifacts and the ore-artifact correlation factor. Nayanjot Lahiri in *Archaeology of Ancient Indian Trade Routes Up to c. 200 B.C.* (1992) has extensively worked on raw material usage and procurement on a sub continental basis. One of the basic postulates examined by her is a continuity of proto-historic and early historic trade routes, the *uttarapatha* and *dakshinpatha*. She has tried to understand the utilization of raw materials by different cultures from pre-Harappan to the beginning of early historic period. Also, she has worked out the probable areas from where these cultures could have procured their raw materials. To establish the contact between diverse cultural zones, ceramic and other artifactual linkages have been considered. On the basis of this data, the possible direction of trade routes has been drawn.

My own M.Phil dissertation (2001) is a study based on the resource-use and access in the Gangetic plains from the first to the fifth centuries AD. The primary focus is on procurement of raw materials in the first five centuries of the Christian era in the

Gangetic Plains, a region bereft of any mineral resources of its own. It is a comparative study of the pattern of resource-use and access in the three zones within the Gangetic Plains namely; upper, middle and lower plains extending up to present Bangladesh. It is based on the utilization of resources in manufactured objects from different archaeological contexts and procurement of raw materials from neighbouring or distant zones. The diverse raw materials studied were metals such as iron, copper, tin, zinc; semiprecious stones as agate, carnelian, jasper, onyx, crystal and quartz; stones as steatite, chert; and ivory. The probable areas of procurement of these raw materials were worked out on the basis of ceramic and artefactual linkages of the archaeological site. The source region of the raw materials was determined on the basis of the Geological Survey of India publications and district gazetteers of the 19th century and later period. The comparative study indicated that there was a significant difference in the raw material usage and its procurement patterns in the three zones of the Gangetic plains in the first five centuries of the Christian era. While the upper and middle Gangetic plains displayed a varied use of resources and procurement from far off regions as Afghanistan from the first to the third centuries AD, the lower Gangetic plains used more resources in the third to fifth centuries AD. The aspect of regional variation within the vast Gangetic plains in the pattern of resource-use and procurement over a span of five centuries was indicated by this study.

Randall William Law's (2011), *Inter-Regional Interaction and Urbanism in the Ancient Indus Valley: A Geological Provenience Study of Harappa's Rock and Mineral Assemblage* is the most comprehensive study focussing on scientific sourcing of raw materials . The research primarily identifies the geological sources from which the stone and metal artifacts excavated at Harappa were most likely procured. The three definite lines of inquiry clearly defined are as follows:

a) From where did the people of the Indus civilization obtain rocks and mineral resources and with whom were the Harappans interacting for this inter-regional trade?

b) Changes that occurred over a period of time in the pattern of this inter-regional trade.

c) How varied was the pattern of acquisition of resources and its uses among the groups in different habitation areas in Harappa?

The study compared various artifacts such as grinding stone, chert, agate, limestone and metal artifacts collected from Harappa with the different ore samples from probable geological sources across South Asia. Each raw material was backed by scientific analysis to make the provenance accurate. The scientific techniques used were X-ray diffraction method, electron microprobe analysis, spectroscopic analysis and instrumental neutron activation process. The various scientific methods helped in a fairly accurate identification of elemental composition of rock and mineral assemblages as well as the geologic samples that were collected through extensive field work. The study tried to understand the resource access by the Harappans. The geologic provenance study also addressed the query on the changing levels of interaction with groups either within the Indus system or outside it for getting the rocks and minerals from within its geographic boundaries or more often outside it.

Settlements

The study of settlement patterns is aimed at the analysis of human habitation and its arrangement in relation to the immediate physiographic and geographic environment (Chang 1958). One of the earliest works on settlement archaeology was conducted by Suraj Bhan and Jim Shaffer (1978) in northern Haryana. On the basis of site measurement and ceramic evidence, several sites with multiple cultures were unearthed. The ceramic evidence indicated a predominance of Late Harappan occupation as compared to the Mature Harappan period. The study showed the evolution of culture from the Late Harappan period onwards in the micro-region of northern Haryana. Two separate proto historic settlement studies were published in *Essays in Indian Protohistory* (1979) on the settlement pattern of Surkotada in the Rakjot district of Saurashtra by Joshi and Chitalwala of the Harappan and post-Harappan period. Joshi found a similar pattern in all the three sub-periods (c.2100-1750 BC). The western side of the mound was at a higher level and was chosen for the citadel complex while the lower eastern side was chosen for the residential complex. Chitalwala's study was based on measurements of the settlements and study of their environs. While linear settlements were found along the river courses, nucleated settlements were more visible in the desert like sectors. The focus of the study was on the distribution of the settlements according to the topography of the region. Louis Flam's (1981) research was on the settlement pattern of pre-historic

period in Sindh, Pakistan where he outlined site distribution on site with reference to their location near springs, seasonal torrents and streams. The study showed a shift in the eastern direction of sites by the beginning of the Harappan period.

Apart from Indus sites, some chalcolithic cultures and their pattern of distribution in relation to geography and resource availability also need to be mentioned. For instance, a pioneering work on the pattern of settlement at Inamgaon, a Chalcolithic period site in Maharashtra is by Dhavalikar and Sankalia (1988:1001-8). The cultural chronology ranged from the Malwa culture (1600-1400 BC), Early Jorwe phase (1400-1000 BC) and the Late Jorwe phase (1000-700 BC). The settlement pattern of the chalcolithic site revealed that it developed into a stratified society towards the Late Jorwe phase. This was evident in the peripheral location of dwellings of artisans as compared to the principal habitation mound. Location of the granary and the house of the chief in the central part of the habitation and their proximity to each other indicated a rudimentary tax structure within the stratified society. The study in a significant way showed how cultures could be understood on the basis of settlement archaeology of a site.

The study of settlement pattern of chalcolithic cultures in the Tapi basin by Shinde (1984) is regarded as the first systematic attempt to understand the reasons behind the growth of settlements in the Tapi basin. The study identified one hundred chalcolithic sites from this part of the peninsula. These belonged to early farming cultures such as the Savalda, Malwa and the Jorwe culture all spread out in the Tapi basin. From the study of structures of houses and burial customs, the existence of a ranked society was evident. The distribution and size of settlements was greatly influenced by the ecological zones in which they were located. The site catchment analysis showed that agriculture was the primary subsistence activity. The distribution of settlements in the Savalda and Malwa culture was located along river banks in a linear set up. No definite pattern was identified in the Jorwe culture. On the basis of the location of settlements to their nearest resources, the type of settlement was determined. These ranged from agricultural settlements, farmstead, herding unit and camp sites based on their proximity to natural sources including raw materials. The study established a definite link between the locations of settlements to the nearest resources. Thus,

access to arable land for agriculture and raw materials for manufacture of objects was primary motivation for the formation of settlements in the region.

Site catchment analysis of Inamgaon was done by R.S. Pappu (1988) as part of the *Excavation at Inamgaon Volume 1*. This studied the exploitation territory of resources within a radius of five kilometers by the chalcolithic people here. The methodology followed was a classification of resources that were mainly agricultural especially the variation in the soil type, and mineral resources found in the Deccan Trap basalts. Location of resources was then estimated ranging from one km radius to 2.5 km (arable land depending on its type) and other resources within 2.5 to 5 km radii. It was found that Chalcolithic Inamgaon required an area of 2.5 km radius to satisfy basic agricultural requirements and all other resource requirements were satisfied within an area of 2.5 to 5 km territory. A similar site catchment analysis was done by Pappu and Vasant Shinde (*BDCRI* vol 49, 1990: 317-331) on the Deccan Chalcolithic culture in the Tapi Basin.

The various approaches to study settlement patterns in the pre-historic and proto-historic period have been followed to a great extent in later works that have merged proto-history and the historical periods. Studies by Makkhan Lal (1984), George Erdosy (1985) and Dilip Chakrabarti (2001, 2007) are some of the notable research works.

Makkhan Lal's work - *Settlement History and Rise of Civilization in the Ganga-Yamuna Doab* (c.1500 B.C. to 300 AD (1984) is one of the early studies on settlement pattern in the early historical period. It is a detailed village-to-village micro level survey of a part of the Kanpur district both along the riverbanks as well as away from it. This survey brought to light about one hundred and fifty sites associated variously with the Black and Red Ware, Painted Grey Ware, Northern Black Polished Ware and Early Historic (Red Ware) cultures. The time frame of the work is from the second half of the second millennium B.C. to the beginning of the Christian era. Lal discussed and interpreted the data obtained from his fieldwork in the Doab as well as the archaeological finds that have been recovered. A major part of the work is based on the size and distribution of settlements in each period. For this purpose the sites were arranged river-basin wise, as a host of rivers flow in between the Ganges and the Yamuna systems. The size of settlements was estimated by the extent of distribution of the diagnostic pottery types of different periods. It indicated the size of the settlement in that period.

The study found that the ancient settlers found the Ganga-Rind Doab environmentally more favourable than the Yamuna-Rind Doab. The analysis showed how the number of settlements and their sizes kept on growing from the Black and Red Ware period through the Painted Grey Ware, Northern Black Polished Ware days up to the historical times. By then the settlements began to come up even in areas away from the riverbanks. It was found that the distribution of sites and settlement patterning depended majorly upon ecological factors. It is the interaction between technology and the environment in the different cultural periods that determined the size, distribution, spacing and growth of settlements, and related effects on population growth. The author comes to the conclusion that there is continuity in the pattern of human settlements and population in the Ganga-Rind Doab right from the earliest times.

G.Erdosy (1985) conducted a field-study in the Allahabad district with Kausambi as the type site from c.1000 BC to 300 AD. The size hierarchy was determined on the basis of the spread of the diagnostic pottery of each period. The settlement pattern in the Allahabad region clearly reflected a change from the mesolithic to the early historical period. The settlement size grew as well as secondary urban sites such as Sringaverpura, Jhusi and Bhita and village settlements came up at strategic locations around Kausambi. It indicated a centralization of the urban development and expansion of smaller settlements into small urban sites in this process. It was during the early urban phase dated c.700-500 BC that urban centers started to develop as indicated by the massive defense wall and growth in settlement size up to 50 hectares at Kausambi. Size hierarchy was again a major determinant of the type of settlement in this study and was supported by a chart on the area of occupation of sites (in hectares).

Another study on the settlement pattern in the early historical period was by Roshan Dalal in "The Historical Geography of the Mathura Region" in *Mathura, the Cultural Heritage* (Srinivasan 1989). Dalal studied the settlement pattern of Mathura from two angles. One was the strategic location of Mathura and sites in its neighbourhood located along the routes converging towards the city. The other, the raw material usage in different periods at Mathura, has been worked out to

understand the increasing importance of trade from the PGW to the Kushan period.

Religious sites such as Bhuteshwar, Chaubara and Kankali Tila were found in the immediate vicinity of Mathura from their sculptural remains. References to traders visiting the Kankali Tila and Mathura are found in the literary records. It reflected on the connection between the traders visiting Mathura as well as the religious sites in the neighbourhood. It was concluded that trade was the main determinant in the location of settlements along routes and in the vicinity of Mathura.

Subsequently, the nature of trade was understood on the basis of raw material exploitation in each period. While the PGW sites demonstrated the use of local resources, the NBPW period sites yielded types of non-local resources such as carnelian. The exploitation of resources in this period indicated that a middle distance trade was undertaken most likely with Rajasthan on the west. Besides, Mathura and its adjoining sites developed as a manufacturing centre based on the mineral wealth of Rajasthan. In the Sunga-Kushan period, the passage of the Silk transit trade route through Mathura was an important indicator of increasing long distance trade in this period that carried gold and lapis lazuli from far off Afghanistan. Trade and the importance of Mathura was a key factor in the settlement pattern in the region rather than topography and environment.

Studies of Lal (1984), Erdosy (1988) and Dalal (1989) were based in particular areas in the present state of Uttar Pradesh. While Lal and Erdosy highlighted the element of site hierarchy in their respective site distribution studies, Dalal examined the site distribution centering on the city of Mathura and the development of trade routes in PGW and early historical periods with respect to the changing importance of the Mathura city and its access to non-local resources. So, within the same region, different kinds of studies have been done each with their conclusions.

Settlement studies spanning vast time frames from the proto historic to the medieval period have been done by Lahiri, Uberoi and Singh (1996), Mughal (1997) and Ihsaan Ali (2009), among others.The study by Lahiri, Uberoi and Singh (1996) focuses on the resource procurement done in the Faridabad/Ballabhgarh area near Delhi It is a detailed site survey of fifty four sites classified into different geographical zones such as the

Yamuna riverine tract; higher plains area and the Aravalli hill section. The artefactual repertoire was documented varying from the surface finds, sculptural and architectural remains. The wide time span from the protohistoric period to late medieval period was able to reflect on the changing pattern of occupation at each geographic zone in the different periods. The Kushan-Gupta phase was most well represented in majority of the sites. Settlements were noted not only in riverine areas but also away from it in the hilly Aravalli zone in this period. This shift indicated the need for exploitation of resources, agricultural as well as non-agricultural. Thus access to resources was an important factor in the expansion of settlements in the Faridabad/ Balabhgarh region in the early centuries AD and later periods. Such studies have focussed on the settlement patterns of micro regions and understood its changes with respect to the region's access to different resources over a long time span.

Another approach to settlement pattern is the work of R. Mughal in Recent Archaeological Researh in the Cholistan Desert (1997). It is a survey of the Punjab districts of Pakistan including the Cholistan area. The emphasis in this work has been the categorization or grouping of sites according to their functions. The distinct categories of sites are divided into industrial sites where evidence of craft related activities, kilns and furnaces have been found; multifunctional sites with evidence of habitation as well as designated workshop areas and camp sites or temporary habitation sites occupied by herders and grazers and cemetery sites have been classified. The total number of sites in the Hakra river bed is 414 and date from fourth millennium BC to the medieval period. The areas covered are the Bahawalpur, Bahawalnagar and Rahimyar Khan districts in Cholistan. The early historical/ medieval sites were concentrated in northern Cholistan area. This kind of study demonstrates the changing concentration and size of sites from the early to late Harappan periods as well as in subsequent periods as well.

A study of the Peshwar Plain of NWFP of Pakistan was done by Ihsan Ali, M.Khalil, Ruth Young and Muhammed Zahir (2009) in 'A Survey of Lower Dir, NWFP'. This is based in the region between Khyber in the west and Indus river in the east. About 1226 sites were surveyed which were dated from the Gandhara Grave culture (c. 2000 BC) to the Islamic period. Surface collections of potsherds and the published ceramic

evidence from sites listed about 67 major types of pottery of different periods. The explored sites were categorized phase-wise and according to their sizes. The location of the sites was noted in relation to irrigated or non-irrigated tracts as also their positions on well defined routes passing through the area. It was concluded that trade routes were more important determinants of the location of the sites of the Peshawar Plain than irrigation. That the distribution of settlements is determined with reference to their position on well defined routes is established by this kind of work.

A painstaking and elaborate study on the pattern of site distribution in the lower and middle Gangetic plains is *The Archaeological Geography of the Ganga Plains*: *The Lower and the Middle Ganga* by Dilip Chakrabarti (2001). It is actually based on an extensive field survey undertaken by the author in the region. The area of study is divided into several geographical segments and describes the distribution of sites within each of them. Each section is described by its geographical location, topography, historical linkages in different periods. For instance, in the Mahananda Plains, the Varendra track in the north Bengal region was a significant area for the historical development of Bengal. Within the region, the sites of Mahasthangarh and Kotivarsa were the early historical fortified sites and served as foci of different types of smaller settlements around them. The Tarai area of Jalpaiguri and Cooch Bihar was marked by temple sites of Jateswar and Mainaguri in the Jalpaiguri district and a brick-built fortified complex at Mendibari in the Jalpaiguri district. The other angle of this study was to relate the sites to the network of routes of which the sites form a part. Records of journey undertaken by Britishers of 19th–early 20th century have been used to outline routes of the Barind track from the eastern Himalayan region of Sikkim and Bhutan that linked Tibet, with Bengal and Bihar. Commercial linkages such as fairs, accounts of peddlers and raw material availability of the regions have been considered to mark out these routes. For example, the Choombi valley route to Tibet was the principal route of this region.The route linking Burma and China through the Brahmaputra valley of Assam has also been outlined.

The geographical sections from the lower and middle Gangetic Plains have thus been studied to form an idea of the alignment of routes that linked the entire region from east to west along the Gangetic plains. A continuation of the above work is *The*

Archaeological Geography of the Ganga Plain: *The Upper Ganga (Oudh, Rohilkhand, and the Doab)* (2007) by the same author. It is a survey of the historical geography of the region up to the foothills of Uttarakhand. This work follows a similar method for studying site distribution and is a historical and archaeological survey of the sites of the upper Ganga plain divided into various sections.

The various approaches to settlement studies discussed above are important in proto-historical and the historical context. These approaches can be classified into different categories. While settlement studies by Joshi (1979), Lal (1984), Erdosy (1985), Dalal (1989), Mughal (1997),Chakrabarti (2001, 2007) have centered on site distribution within an area, Bhan and Shaffer (1978), Chitalwala (1979), Lal (1984) have laid more emphasis on the size and measurement of sites and determining the pattern of settlement. One of the major trends identified in the studies on settlement pattern is based on the ecological settings of habitations in different cultures. The settlement studies (Pappu 1988, Dalal 1989, Pappu and Shinde 1990, Raju 1990, Lahiri, Uberoi and Singh 1996, Ali 2009 and Chakrabarti 2001, 2007) also establish that settlements developed and expanded on the basis of resource potential of the region and often determined by proximity to trade routes rather than ecological factors alone. Makkhan Lal (1984) with the emphasis on size hierarchy of settlements has found a link between the expansions of settlements to technological advancement with the introduction of iron. These are some of the works that have examined different regions and their specific pockets on a micro-level and at a macro scale.

Patterns of Communication

The issue of trade routes linking geographical regions is a well researched subject. Some of the early writings primarily based on textual sources - Bagchi (1951), H.P Chakraborty (1966), B.Srivastav (1968) Moti Chandra (1977) deal with the issue of trade routes as part of ancient Indian trade in general. Haripada Chakraborty's *Trade and Commerce of Ancient India* (1966) and Moti Chandra's *Trade and Trade Routes in Ancient India* (1977) have addressed different aspects of trade activities such as commodities of exchange, trade laws, corporate activities like the functioning of guilds and means of communication. A large part of these works are formed by the discussions on trade routes of India especially with Rome on one side and with China

on the other. Moti Chandra's work is one of the important efforts to address the issue of trade routes as part of trade activities. He has attempted to solve many geographical problems by identifying several foreign ports mentioned in Indian literature that were hitherto unidentified. More recently, "The Assam-Burma Route to China" by Chakrabarti and Lahiri (1986: 123-34) has looked at trade routes in historic India. It looks at the three different routes from the Brahmaputra valley to southern Chinese city of Kunming; the work has focussed on the archaeological evidence in the form of kaolin clay and Chinese celadon ware found at a site in Assam namely Dah Parbatiya at Tezpur to establish the Chinese connection in context of the seventh century AD.

Other works by Dales (1971), Asthana (1979), Chakrabarti (1977and 1990), Ratnagar (1981) and Lahiri (1990) have majorly focussed on the Harappan trade network within as well as with west Asia. Chakrabarti has determined the routes to west Asia primarily based on the sites with evidence of Indus contact, Ratnagar has focussed on the coastal routes between west Asia and Indus region often giving way to internal markets such as the Kutch region. A thorough discussion on the aspect of formation of trade routes in early Indian history was done by Dilip Chakrabarti in *the Theoretical Issues in Indian Archeology* (1989). The author has highlighted the need for further research on the issue of trade routes itself.

Nayanjot Lahiri (1992) in The *Archaeology of Indian Trade Routes up to c.200 BC* has analyzed the ancient trade routes by the resource-use and distribution in archaeological contexts, tracing the probable areas from which they could be obtained and on the basis of literary records and geological material discusses the possible lines of movement of these raw materials from their sources. This movement has been traced through the alignment of archaeological site distribution for the entire subcontinent in the pre-historic, proto-historic and early historic period.

The Archaeology of the Deccan Routes (2005) by Dilip Chakrabarti is an extensive field work to understand the network of routes that existed in ancient period linking the Ganga-Yamuna plain between Rajgriha and Mathura with Andhra in the eastern Deccan on one hand and Maharashtra in western Deccan. This is one of its first kinds of study on trade routes that is based on field-study of the geographical location through which the routes pass. Based on the methodology suggested by the author

previously (1989), in the present work the author traces the probable routes by surveying the location of contemporary settlements and linking them with the geographical lines of movement. The routes have actually been traversed by the author with due attention to its geography, and all the archeological sites along them. Important sites such as Vidisa, Bharhut, Kausambi lie on a network and has been confirmed by the field surveys undertaken for this work.

Among the routes identified are the following:

(a) Rajgir-Patna was identified as major points in south Bihar; Sasaram-Bhabua sector was a gateway to the Kaimurs. Ahraura-Mirzapur via Chunar went across the Son over to Sarguja and the Chhattisgarh plain and reached the Deccan.

(b) The other route began at Ahraura from the direction of Benaras, across Robertsganj where the Son can be crossed at Agori, later the route followed to the Ramgarh hills in Sarguja- Malhar, crossed the Mahanadi and went on to modern Raipur.

From here one route went to Orissa while the other went further to Andhra coast.

(c) Another route began at Benaras; the Agra-Mathura stretch was the westernmost starting point of the route to the Deccan that reached Malwa. Ujjain was the most important nodal point of the routes passing through western Malwa in central India.

The study established that the ancient route to the Deccan continued to be used in the medieval and later periods. Here again, the distribution or alignment of important archeological sites on different routes from the Gangetic Plains to the Deccan have been highlighted to carve out the routes.

SCOPE AND METHODOLOGY OF THE PROPOSED DISSERTATION

The current work is an extension of my M.Phil dissertation "*Resource-use and Resource Access in the Gangetic Plains* (1^{st}-5^{th} c. AD)". The focus of my work is on trade in raw materials from the c.200 BC to c.750 AD for the Indian subcontinent as a whole.

This study is aimed at understanding the trade between diverse regions, based on the procurement of raw materials and resources used in the manufacture of objects found

in the different categories of settlements in the entire subcontinent over a long span of time (c.200 BC-750 AD).

For this purpose, the distribution of different types of settlements (urban, small sites, and religious sites) throughout the subcontinent has been surveyed. The regions and the settlements are studied site-wise. This will be done through a zonal / state-wise study of archaeological sites reported in the excavation reports and explorations. The types of sites are broadly categorized into urban, smaller sites and religious sites. The character of the individual sites is understood primarily on the archeological remains exposed in excavations, such as structural remains, pottery (period specific), and evidence of manufacture of objects, artifactual repertoire and literary references if any, to the site. However, the character of sites is not rigid and often displays a mixture of traits. To put it in another way, a typical urban settlement can frequently have a religious component to it.

A survey of resource-use in manufactured objects in various archaeological contexts has been done by studying the excavation reports and other explorations. Most reports have definite sections on various finds that range from structural remains, metal artifacts, stone artifacts, coins and pottery. Some even mention the period of the particular artifact. These are helpful in looking at the pattern of resource-use historically. The type of raw materials I am looking at are mainly metal and stone artifacts. In metal products I look at artifacts such as knives, nails, arrowheads, spearheads, sickle, chisel, points, antimony rods, tripods, bells, bangles and stone artifacts such as ear pendants, beads, sculptures and decorative pieces.

There are stone artifacts for which no specific raw material has been specified in the reports. These raw materials have been mentioned just like that in the entire text. Also, the same maps have been used in multiple places to depict adjoining regions. The charts have been numbered a, b and c that indicate the three periods of the study respectively.

Based on the raw material usage of these settlements, the demarcation of the probable areas from which such resources were obtained has been studied. It has been done through a simultaneous exploration of natural resources of these raw materials based

on the Geological Survey of India publications, district gazetteers and imperial records. This has been done to identify natural sources of various raw materials whether local or outside the geographical zones.

The correlation between manufactured objects and the natural source of the raw materials used is supported by the ceramic and artifactual linkages between regions. For this, inscriptional, numismatic and literary associations have been explored. Historical linkages of various types have been used to establish the connection between different regions and outline the patterns of communication. In archaeological evidences, there are certain ceramics associated with particular periods and cultures such as OCP, NBPW, Black and Red ware, plain Red ware, Glazed ware and so on. In case, such ceramics and artifacts are found outside the specified geographical limits to which they are associated, these are considered to substantiate the connections between different regions. Such links are helpful in determining the pattern of communication that developed in different periods of Indian history. The other kinds of linkages taken into consideration are numismatic evidences wherein coins issued by different dynasties would be traced beyond their political boundaries. The circulation of such coins would possibly indicate expansion of trade activities in the particular period. Epigraphic linkages are also taken into consideration to link political extent of different regional dynasties. Donative records at religious sites of Buddhist and Jain creeds would be used to determine mobility of laymen as well as traders to neighbouring and distant lands beyond political boundaries. Literary works often throw light on the political leadership of its period and the expansion of its power beyond the specified geographical boundary. The Sangam works and Buddhist and Jain literature also refer to the social background and trading activities of laymen and devotees surpassing defined political borders. Such literary references have been used in the present work to establish connection between different regions within the Indian subcontinent.

The narrative is supported with maps of specific regions showing location of sites and their resource-use and charts describing the artifacts. The charts are accompanied by the relevant maps.

The significance of this study is that it would give a wider perspective on trade in raw materials as an aspect of trade for the whole subcontinent and not just a part of it. It would be able to bring forth the different types of settlements, changes in their distribution pattern within a region, and indicate the varying nature of trade in raw materials over a long time span on a subcontinental level. The broad time frame would be able to reflect and address the issue of decline of trade in the Gupta and post-Gupta periods for the whole subcontinent and analyze whether it was a uniform phenomenon or not.

CHAPTER 2

EARLY INDIA FROM THE NORTHWEST TILL ORISSA

c.200 B.C.—300 A.D.

The post-Mauryan period of Indian history (second century B.C. to – third century AD) is marked by the waning influence of the great Mauryan Empire and the coming to power of several regional dynasties namely Sungas, Kanvas, in the north and Satavahanas, Ikshakus and Pallavas in the Deccan and far south. This period is significant for the growing outside influx of several exogenous ruling dynasties especially from the northwest province. These dynasties namely the Indo-Greeks, Sakas, Pahalavas and Kushanas finally established their empire in northwestern and northern parts of India over several centuries. This period was also marked by trade contacts with west Asia, Mediterranean and Central Asia. It may have also been strongly encouraged by these newcomers. This new phase of urbanization brought forth new centers of power and trade. New urban centers came up in various parts of India that prospered under different regional dynasties and centres of powers.

The Northwestern Region and the Potwar Plateau

The Northwest Province lying between the Hindukush and Salt Range in Pakistan is a prominent region in the history of the subcontinent. It is situated in the path of several important trade routes passing through it to the west and Central Asia on one hand and on the other, to India. It formed the gateway for the entry of the Achaemenids and most importantly, Alexander, followed by the establishment of the Mauryan rule. The region remained crucial with the advent of the Indo-Greeks, Saka-Parthians and the Kushanas in the subsequent periods. Menander (c. 155-130 B.C.), is known to have conquered Patalene (Indus delta) in the wake of the expansion of empire by the Indo-Greeks (Majumdar 1996: 338). This was followed by Parthian rule in the Afghanistan-Punjab and Sindh province in c.43-44 B.C. (Majumdar 1996: 399). Kushana rule was finally established in the early centuries A.D. as known from epigraphs such as the Panjtar inscription and the Sui Vihar inscription (Majumdar 1996: 403). Later, coins of Kanishka III who ruled

Chart 1a

Potwar Plateau and NWFP—200 B.C.-300 A.D.

Raw Materials	*Charsada*	*Sahri Bahlol*	*Shah-ji Ki-Dheri*	*Jamalgarhi*	*Zaro Dheri*	*Ishpola*	*Taxila*
Copper/Bronze	coins,antim-ony rods,	coins	coins,Buddha figure, Bronze temple ornament	coins,finger-rings,brass finger-ring	coins		bangles, Bronze pendant, bracelet, bowls, hair pin, Bronze objects, jewel caskets, Bronze seal, bowl,dish, caskets, jug, Bronze cups, earrings Copper relief, basin, incense burner, incense bowl, inkpot Bronze inkpot, bells, keys, clamp, finger rings, seal, beads, coins, Copper bracelet, antimony rods, pin, earring, trisula, buckles, pots, cauldrons, goblets, vases, cups, dishes, frying pans, basin, hammer, Bronze figurine, medallion
Iron	knives,rings, nails	plates		finger-rings,belts, nails			spoons, ladles,arrowheads, chisels, spades, finger-rings, key,razor,axe,disc, hooks, safety pins,pyrites, frying pan, nails, rods, staple, bangles, cauldrons ,tripod stands, bowls,dishes,saucers, clamps, incense burner,chains,showels, bells, spades, lock-keys, folding chairs,swords, forks, daggers, spears ,javelin butts, sickels, armour,helmet,shields,horse bridles, adzes, knife, chopper, saw, tongs ,tweezers, hammers, anvils
Lead	antimony rods, disc						antimony rods, coiled strip

Chart 1a (continued)

Raw Materials	*Charsada*	*Shahri Bahlol*	*Shah-ji-ki-Dheri*	*Jamalgarhi*	*Zaro Dheri*	*Ishpola*	*Taxila*
Gold	ornament	coins				reliquary	ear pendant, chain, amulet, discs bangles,torque,bracelet,rosette, finger rings,amulet case,wire, pendants,necklaces,coin hoard casket,safety pin,beads,chain, gridle, broaches, hairpin,bar, locket,box settings
Silver		coins					leaf,discs,dishes,hairpin, bangles,anklets, seal, caskets
Semi-Precious stone	Amethyst, Onyx,Chalcedony,Rock Crystal,Agate, Carnelian beads,		Agate beads		Carnelian beads		Jasper ear-reels, beads,Agate beads, Chalcedony beads, Amethyst beads, Aquamarine, Beryl,Onyx beads, Carnelian beads, Garnet beads, Quartz Crystal bead Rock-Crystal,Carnelian Intaglio, beads, Agate, casket finger ring, Serpentine beads, Rock-Crystal discs, Crystal Chalcedony beads
Ruby							beads
Pearl							beads
Jade							beads
Lapis Lazuli	disc, beads						beads

,

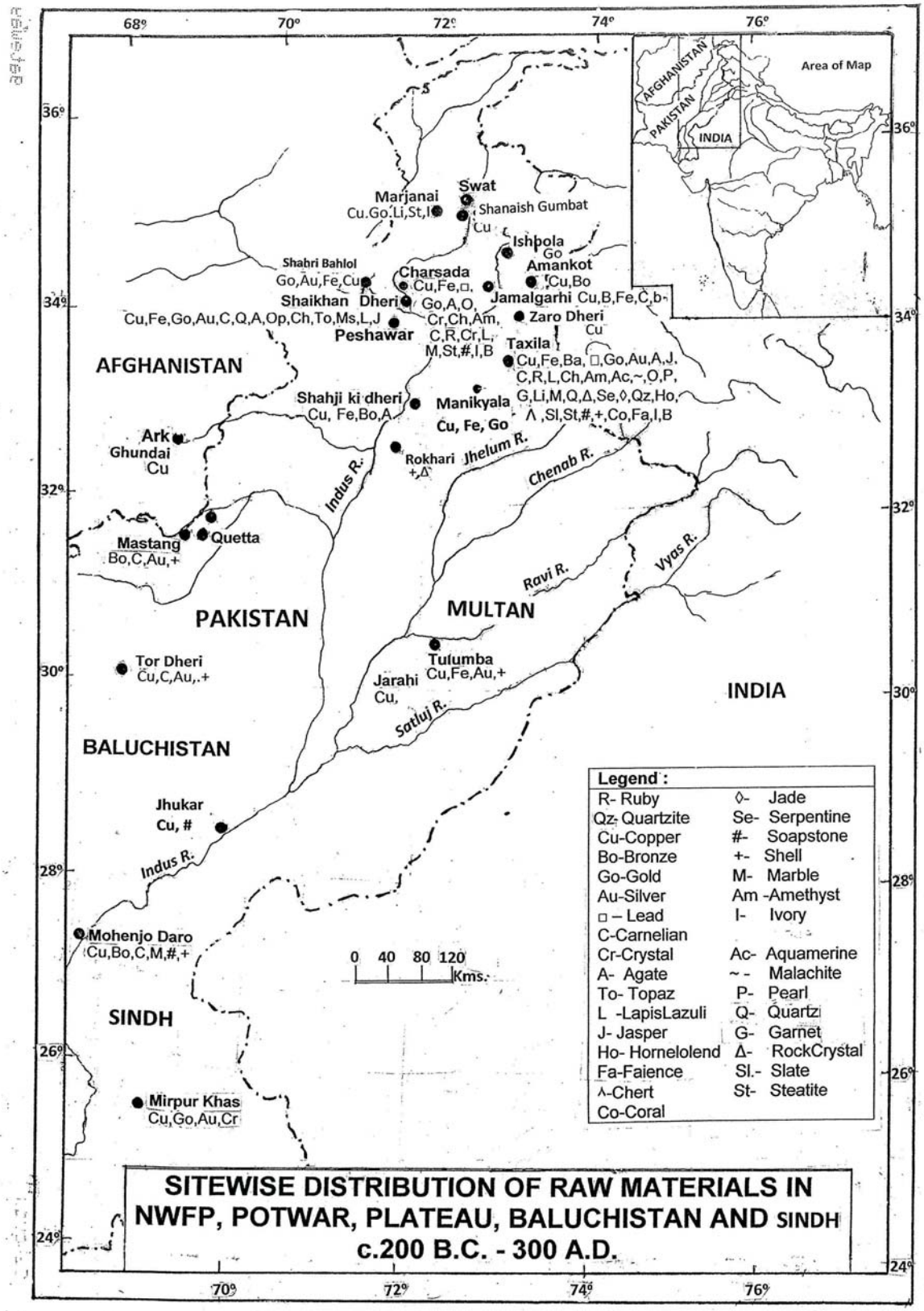
Chart 1a (continued)

Raw Materials	*Charsada*	*Sahri Bahlol*	*Shah-jiki Dheri*	*Jamalgarhi*	*Zaro Dheri*	*Ishpola*	*Taxila*
Ordinary Stones	Schist lamp, bowl, Marble pieces,Lime-stone						Limestone disc, goblet, gnesis pivot stone beads wheel sockets, Granite door sockets, Quartzite, Sandstone querns, Sandstone mullers,Schistdishes,tray,Granite beads, Shale beads, Malachite beads Marble amulets, Limestone beads,grinding mills,Quartzite crushing mill, Hornblende mortars,dishes, saucers,cups, vases,Schist toilet trays, Slate trays, Chert barnisher, Slate touchstone, spindle whorl, Slate amulets, Slate seal
Steatite/Soap-Stone	lamp, fragment of vessel, lid beads, Soapstone beads						beads, steatite moulds,caskets,Seatite Soapstone seal, Steatite slab,matrix, Steatite moulds beads, Soapstone beads, figurine
Shell,	bangles, fragments of vessel, ornaments						uncut beads, fingering, idol, relief head, ladle, necklace, Coral beads, pieces, seal
Faience							beads, spacer
Ivory	beads						Antimony rods,die,lid, comb,casket,bangles,ring, hairpin,handle of mirror, knife handle,corner post, leg of table,dice

Chart 1a (continued)

Raw Materials	*Amankot*	*Rokhari*	*Haripur*	*Manikyala*	*Sanghao*	*Shaikhan-dheri*	*Marjanai*
Copper/Bronze	coin,Bronze image			coins,pieces	coin	coin,mirror handle antimony rods	coin
Iron				nails,clamps hooks,flat pieces		nails,door knobs, hooks,chains,door shutters,keys,scales, axe	
Gold				Leaf		coin,earring,pendant, bead	box
Silver			coins			coins	
Semi-Precious stone		beads				Carnelian,Quartz beads, Agate,Jasper beads,Opal, Chalcedony beads,Oriental Topaz beads,Moonstone beads	
Lapis Lazuli						beads	
Ordinary stone						grinding mill,stones,querns mullers,whetstones,Schist lamps	schist talc stone, Limestone relic casket

MAP-1


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu.Go.Li,St,I
Swat
Shanaish Gumbat
Cu
Ishpola
Go
Amankot
Cu,Bo
Shahri Bahlol
Go,Au,Fe,Cu
Charsada
Cu,Fe,□,
Shaikhan Dheri
Go,A,O,
Jamalgarhi Cu,B,Fe,C,b
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
Cr,Ch,Am,
C,R,Cr,L,
M,St,#,I,B
Zaro Dheri
Cu
Taxila
Cu,Fe,Ba,□,Go,Au,A,J,
C,R,L,Ch,Am,Ac,~,O,P,
G,Li,M,Q,Δ,Se,◊,Qz,Ho,
Λ ,Sl,St,#,+,Co,Fa,I,B
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu, Fe, Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dheri
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu, #
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
Λ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c.200 B.C. - 300 A.D.

till c. 210 A.D. are known from Punjab, Siestan and Afghanistan as far as Bactria which was the homeland of the Kushanas (Altekar and Majumdar 1986: 14).

Taxila in the Potwar Plateau is situated at the head of the Sindh-Sagar Doab between the rivers Indus and Jhelum. The archaeological remains are mostly available from the site of Taxila. In the ancient days this formed the meeting point of three grand trade routes. First from eastern India through Pataliputra; second, from West Asia through Bactria and the third from Kashmir and Pushkalavati to Central Asia. Taxila constituted the three cities of Bhir, Sirkap and Sirsukh representing different cultural levels from the sixth century B.C. to early centuries A.D. Sirkap is one of the most well excavated cities of the region (Marshall, 1951:1-2).

The other sites scattered in the northwest province are, Charsada Takht-i-Bahi, Jamalgarhi, Zaro Dheri, Ishpola, Amankot, and Haripur (Marshall and Vogel 1902-03: 142-172; Spooner 1907-08: 132-33; ARASI 1920-1: 24-5; 1922-3: 97; 100-1; 160; 1930-34: 314).

Sitewise Distribution of Manufactured Objects

The raw materials used in this sub-region have been elaborated in Chart 1a. They are, copper, lead bronze, brass, iron, gold, silver, agate, amethyst, aquamarine beryl, carnelian, lapis lazuli, garnet, jasper, malachite, onyx, quartz-crystals, rock-crystal, jade, crystal, mother of pearl, chalcedony, granite, marble, limestone, sandstone, slate, steatite, soapstone, shell, faience, coral, and ivory. These have also been specified on the accompanying map. For convenience, this map which shows the sitewise distribution of raw materials in various regions is reproduced as and when these regions figure in the text.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Shapeless bits of iron were found in the excavations at Sirkap, Taxila (Ghosh 1947-48: 78).

Copper: Shapeless bits of copper were found in the excavations at Sirkap (Ghosh 1947-48: 78).

Gold: One lump of pure gold cast in crucible of late Saka-Parthian level was found at Taxila (Marshall 1951: 622,637). From one of the chambers on east side of the palace

at Sirkap were recovered a number of moulds used for casting coins. They were in the shape of flat circular tablets of terracotta. They had the impress of six to twelve coins in each. Some of the coins represented were issues of Saka king Maues, Azilises, Azes II. The moulds date from AD 60 when the Kushana invasion resulted in the destruction of Sirkap city (Marshall 1975 reprint: 177).

Shells: Several uncut shells have been found among other shell objects at Taxila (Marshall 1951: 670).

Character of Sites and Distribution of Manufactured Objects

Taxila was known as a prosperous city as well as a seat of learning in the early days. It owed its prosperity and excellence to the three trade routes that carried the maximum bulk of traffic passing through land between India, Central Asia and West Asia. In early Indian literature, Taxila was known to have a legendary history, which went back to remote antiquity. The *Ramayana* tells us that Taksha who appointed his sons as the rulers of two cities founded Taxila at the same time as Pushkalavati in Gandhara which was founded by Bharat. The *Mahabharata* relates that King Janmejaya of Hastinapur who performed the great snake sacrifice conquered this city. In Buddhist literature especially the *Jatakas*, Taxila often figures as a seat of learning. The Jains claim that Taxila was visited by Rishaba, the first *Tirthankara*. Archaeologically however the excavations did not place the earliest remains of Taxila before the sixth century B.C. (Marshall 1951: 1-2).

As a flourishing urban centre in ancient times, Taxila was primarily a city founded by the Indo-Greek, Saka-Parthian and Kushana rulers that continued almost up to the late fourth-fifth century A.D. The site has three cities. The Bhir mound is the oldest of them dated to the Mauryan period. The Dharmarajika stupa is the earliest of all Buddhist monuments at Taxila (Marshall 1951: 4). The city of Sirkap was built by the Bactrian Greeks in early second century B.C. and is surrounded by a massive stone wall (Marshall 1951: 113). Sirsukh dates from the early Kushana times. It is defended by massive stone walls with heavy diaper masonry typical of the Kushana period. Semi-circular bastions strengthened it from the outside. Digging here exposed the ruins of a large building comprising courts and attached chambers (Marshall 1951: 219). There are several isolated monuments, mainly Buddhist stupas and monasteries scattered

about the site (Marshall 1951: 4). At Kalawan stupa, along the original structure of the main stupa was noted the repair of the original walls at a later date of the third century A.D. It comprised a stupa-court and three large courts of cells and other monastic halls (Marshall 1951: 323; 1951: 322). A monastery west of the Kunala stupa had an assembly hall and other minor antiquities including coins of Vasudev and other sculptures (Marshall 1951: 353). The Jaulian stupa dates from the Kushana times and it was in use from the second to the fifth century A.D. (Marshall 1951: 371). Pottery recovered from here is mostly in the form of narrow necked jars, bell shaped pot, spouted pots, inkpot and basin shaped cover for stone jar (Marshall 1951: 385).

The sites in the northwest are Charsada, Takht-i-Bahi, Jamalgarhi, Zaro Dheri, Ishpola, Amankot, and Haripur. All these have post-Mauryan settlements and have yielded artifacts of this period. The Northwest formed the province of Gandhara of ancient times. General Cunningham identified modern Charsada with Pushkalavati, the capital of Gandhara. The city is, best known from its connection with the campaign of Alexander (Marshall and Vogel 1902-03:143). The city was very important during the Indo-Greek period. It has a full-fledged Indo-Greek and Kushana settlement. An inscription in Kharosthi is found near Ara near Attock dated in the Kanishka year with the name Purushapura which has been taken to stand for Purushapura. Kanishka built a monastery at Purushapura (Kamal 1993: 181).The Bala Hissar mound has remains of small buildings of typical Buddhist masonry; layers of pebble foundation were exposed along with a wall in one of the pits built of diaper masonry commonly found in Buddhist buildings of the district (Marshall and Vogel 1902-03: 148). Other artifacts included sculptures, terracotta figures, and silver coin of Menander, Azes and Kanishka together with Buddha sculptures with halos (Marshall and Vogel 1902-03: 152-9).

The sites in the region are mostly urban-religious centers as several of them have revealed stupa and other structural remains associated with Buddhism. Shahri-Bahlol in the Peshawar district is one such urban site. It was in continuous occupation from the Kushana period (Stein 1911-12: 109). The site revealed foundations of a round stupa base and portions of high and massive retaining walls of Gandhara construction. Seated Buddha figures were discovered. The monastic quadrangle yielded one stone

lamp of large size and a number of inscribed pottery fragments (Spooner 1906-07: 103; 1909-10: 47, 49). Takht-i-Bahi in the heart of Yusufzai country yielded important ruins. Here, a monastic complex and massive walls rise to the side of this complex. The other architectural remains are a little stupa and a line of chapels from where Bodhisattava figures, and seated Buddha figures were recovered (Spooner 1906-07: 37). The only epigraph recovered from here is an inscription of Gondophrenes dated c. 46 A.D. (Spooner 1907-08: 132-33).

The religious sites mostly known from their structural ruins are, Shaikhan Dheri in the Frontier circle, Ishpola in the Khyber, Rokhari in the Mianwali district of Punjab and Manikyala situated southeast of Rawalpindi, Shnaisha Gumbat and Marjanai in Swat district. These are some of them that have yielded artifacts besides structural remains. Zaro Dheri in the Frontier circle, thirteen miles from Manshera is a small urban site. The name Zaro-Dheri or Zaro ki Dheri is due to the belief held by the local cultivators that the mound contains gold, zar (ARASI 1922-23:96). Manikyala in the Rawalpindi district was described by Cunningham (1970: 1, 2 and 5) as a site where on all sides it is surrounded by ruins of temples, stupas and monasteries. To the east of this stupa was a monastery where almost 100 monks resided and studied the Mahayana. Huien Tsang too mentions the making of colossal figures here. Cunningham found a large number of pure Greek coins at the site. He found a gold coin of Kanishka, relic caskets and figurines of various animals in different semi-precious stones (Cunningham 1970:6-7). A hoard of Kushana copper coins have been reported from Adnandheri located in Malakand Agency. Stupa remains were found here (Dani 1968-9: 42). Kassinath in the Malakand Agency in the NWFP revealed Gandhara sculptures and copper coins of Kushana rulers (PA 1968: 3).

Shahji-ki-Dheri in the Frontier circle is a site where a chaitya and relics of Buddha of the Kushana period were found. The monument was of cruciform type with a square base. Large circular bastions (like tower bases at each corner) were a unique feature (Hargreaves 1910-11: 25-27). Ishpola in the Khyber is another site where a stupa assigned to the second century B.C. was unearthed and a gold reliquary was found (ARASI 1951-22:100). The other small sites of the region are Amankot in Peshawar district and Rokhari in Mianwali district of Punjab (ARASI 1922-23: 160; 1925-26:

58). A Buddhist stupa was discovered at Rokhari. Manikyala situated southeast of Rawalpindi also has a gigantic Buddhist stupa. The excavations here show that the remains maybe dated to the beginning of the Christian era (Rahman Dar 1970-1: 7). Jamalgarhi in the Frontier circle is another site where the exterior walls of the main stupa were found (ARASI 1920-1: 24). Shaikhan-Dheri was an important religious-urban center of this region. Menander, the Indo-Greek king in the middle second century B.C, probably founded the city. Its occupation continued up to Kushana times. Shnaisha Gumbat is a Buddhist site with stupa and monastery. The main stupa complex has produced coins of Kushana ruler Huvishka (Rahman 1993: 16). The site is rich in sculptural remains, images of the Buddha and railing pedestals belonging to the flight of steps of the main stupa (Rahman 1993: 21). Several copper coins of Kushana rulers Huvishka and Vasudeva have been revealed at the site (Rahman 1993: 39-40). Mekha Sanda in the Mardan district is a Buddhist site. Excavations revealed stupa remains with stucco reliefs of the Buddha. The structures include a staircase connecting the main stupa court, votive stupas, chapels with shrines and an assembly hall. Statues of the Buddha were found on pedestals. Construction was mainly of diaper masonry characteristic of the second to the fifth century A.D. (Dani 1988: 81). Thareli in the Mardan district have yielded copper Kushana coins (PA 1968: 153). Marjanai is another Buddhist site in Kabal tehsil in Swat district. Amongst the remains of the votive stupa no. 3 were sculptures, terracotta objects and relic caskets (Taj Ali 1995: 8). The material used for the sculptures are mostly of green phyllite and black schist. Five relic caskets have been discovered from stupa III. They are of soapstone, green phyllite, and talc stone and so on (Taj Ali 1995: 21-2). Amluk in the Barikot district in Lower Swat sector has several stupas. The sculptures recovered include Buddha figure of Gandharan style. However, among them are some heads of sandstone from Mathura. The head is executed in the style similar to other Mathura sculptures (Barger and Wright 1985: 21). Similar influences of Gandhara style on the Mathura sculptures have been pointed out by the author(s). The interaction between the two great centres of art during the Kushana period was highly probable in this light (Barger and Wright 1985: 22).

The antiquities from the region reveal a variety of resource usage. Copper and bronze were used mainly in the form of decorative ornaments such as bangles, pendants, bracelets, jewel caskets, cups, incense burners, inkpot, bells, keys, hammer, antimony

rods, medallions, figurine, vases, cauldrons, antimony rods, bowls, dishes and earrings and coins, finger-rings and seal. Utility objects such as mirror handle and implements as nails, door knobs, hooks, chains and so on are also found. Jamalgarhi has brass finger rings amongst its artifacts. The use of iron is substantial. It has been used mainly in the form of arrowheads, bowls, saucers, nails, hooks, chains, axe, safety pin, chisels, spades, key, razor, clamps, amour, tweezers, helmet, anvils, axes and horse bridles. The use is varied. From its use as household objects, implements and war objects as well as ornaments, decorative objects. Lead antimony rods were notable. Gold and silver were mostly used for ornaments such as ear pendants, chain, necklace, griddle, bangles, bracelets, finger rings, amulets, rosette, sea, coins and caskets. At Ishpola a reliquary of gold is notable. Haripur in Hazara district has yielded silver coins (Srivastava 1930-34: 314).

The fact that one finds decorative objects as well as ornaments in metals like copper, bronze and iron indicates its use by different strata of people. All this cumulatively reflects upon the urban nature of Taxila and a few sites of NWFP including Jamalgarhi, Shah-ji-ki-Dheri, Shaikhan Dheri, and Charsada.

Semi-precious stones too have a wide usage at urban sites, mostly in the form of beads, pendants and ear studs. The materials used are amethyst, agates, beryl, carnelian, onyx, jasper, rock crystal, pearl, garnet, quartz, chalcedony, crystal, opal, oriental topaz, lapis lazuli and moonstone. Lapis lazuli is used as discs at Charsada and Shaikhan Dheri. The use of pearl is noteworthy at Taxila. It reflects upon the external contacts of this urban site. The use of ordinary stones such as slate, limestone, marble, sandstone, schist, granite, are found mostly as beads, mullers, querns, grinding mills, trays, saucers, cups, whetstones, lamps, and limestone beads and amulets were the different artifacts found. Overall, a variety in resource usage is evident. Soapstone and steatite are found as caskets, seal, beads, seal and figurine, beads, vessels, lamp and lid of vessel. Faience beads are found at Shaikhan Dheri. Shell in uncut form as well as beads, bangles and finger rings of shell are found from Taxila. Its use in the form of idols and relief is an interesting find. Shell and coral were used in form of bangles, beads and other unspecified ornaments. Ivory has been used mainly as beads, bangles, hairpins, dice, styli, knife, combs and rings.

On the whole, urban sites in the NWFP and Taxila yielded artifacts made from a wide range of raw materials.

Raw Materials Available Within The Sub-Region

The raw materials that are available in the Northwest Frontier Province are as follows:

Gold

Practice of gold washing in Punjab is of considerable antiquity. Districts where gold is found are Peshawar district above Attock and in the Kabul river, Hazara district (bed of the Indus) Rawalpindi district (Attock), Jhelum district (Ball 1881: 211; Rose 1908: 153; Chakrabarti 1997:117-8). Washing of gold is reported from Achinathang in the alluvial terrace above the Indus river (Nanda 1992:17).

Iron

Kalabagh: Iron ores are found in abundance in the hills to the southeast of Bannu. Great manufacturing was done at Kalabagh and the metal from here was in great demand in the nineteenth century. Ores occur at Chichali in Kalabagh in the Surghar Range and near Sakesar near Salt Range. The iron was of low grade (Ball 1881:404). The formation is said to be made up of glaonitic sandstone and shale. Amidst these beds are bands of haematite (Krishnan 1949: 373).

Kohat area: The largest deposits of iron ore are found in Mazarai Tang, Marai Bela and Samana Range in the Kohat area (Panwar 2004: 15).

Hazara District: Red haematite ore occurs in considerable quantities in the district at Bakot and northeast spur of Sirban hill (Rose 1908: 134; LaTouche 1918: 275).

Abbotabad district: Langrial iron deposits are in the vicinity of Langrial village in Haripur tehsil south of Abbotabad and Galdanian deposits are located north east of Abbotabad (Panwar 2004: 15).

Iron is found in the Yusufzai hills where signs of old workings have been found (Rose 1908: 49).

Chitral district: Good quality of iron is mined and worked at Kashkar in Chitaral region (Rose 1908: 214). Lahiri has noted a large deposit of magnetite from Gowai in Chitral (1992: 281).

Waziristan: The chief mineral product was iron, which is found smelted at many places especially in the hills above Makin (Rose 1908: 252). It also occurs at Kaniguram where the ore is highly ferruginous shale occuring beneath nummulitic limestone (La Touche 1918: 275).

Antimony

Antimony was observed at Bakot in the Hazara district (Rose 1908: 50).

Copper

Valentine Ball (1881:266) noted the presence of copper bed within smal nodules of copper sulphide in the Salt Range. Good quality copper was mined and worked at Chitral district at Kashkar (Rose 1908: 214).

Lead

Lead is found in the Jhelum district in two or three localities of the Salt Range. Sulphur of lead or galena is found in small nodules (*Gazt.of Jhelum District* 1883-84: 30). Oxide of lead occurs in the Hazara district (Rose 1908: 134). Lead ore in Pakistan's NWFP is found primarily in the Chitral, Allai Kohistan, Swat and Hazara districts (R. W. Law 2011: 405).

Agate and Chalcedony

Agate deposits located in the mountainous regions north of the Upper Indus Basin are small in size, widely scattered and, in certain instances, extremely remote (R. W. Law 2011: 281-82). Most are associated with volcanic rocks. Two occurrences, one in the Khewra Trap of the eastern Salt Range where small geodes of reddish quartz and chalcedony were observed and the other in the Pir Panjal Trap of western Kashmir where amygdules of chalcedony were reported. In the NWFP, agate nodules derived from volcanics are found in the Dir Kohistan area. Here fine agates and carnelian are to be found in a small ravine at Kyamgo Traggar, north of Pangong Lake not far from the Tibet-Kashmir border (Law 2011: 279-80).

Rock Crystal

Quartz crystals are extracted found in the gypsum of the salt marl from Kalabagh on the Indus (I.G. I Vol III 1908: 162).

Ordinary Stone

Limestone

NWFP: Limestone is present as sedimentary rock in Kohat, Nowshera, Pezu and Moghalkot, Zinda pir and Margalla Hills (Panhwar 2004: 15).

Salt Range: The western portion of the Salt Range in the Trans-Indus region is full of limestone at Daudkhel. The stratum is thick near Amb, near Kalabagh and Sheikh Budin hills and Surghar range (Krishnan 1949: 371).

Limestone occurs in Punjab in Attock, Jhelum and Rawalpindi districts (Brown 1936: 167). At Attock, the folded strata of Kala Chitta hills of this district have limestone deposits (Krishnan 1949: 370-1). Limestone occurs all over the district of Kohat (Rose 1908: 174).

Bannu Plain: Along the ridges striking limestone, sandstone and shales are present. Some Mesozoic limestone east of Miram Shah has also been noted (Rose 1908: 183).

Dera Ismail Khan: Massive limestone occurs along the lowest formation of the Shirani and Sulaiman hills and Sheikh Budin hill in Marwat range (Rose 1908: 196).

Hazara District: The northwest contains massive limestone overlain by Spiti shales. The limestone is dark grey in colour (Krishnan 1949: 370).

Slate

In Jaunsar and other parts of the hills in Punjab slate quarries are reported. It was obtained from areas such as Attock, Abottabad and Spiti (Ball 1881:553-4). The middle portion of Hazara is composed of highly inclined slate series. The series outcrops in a westerly dirtection to Attock where it is well exposed (Krishnan 1949: 5). Much of the flat plain of Peshawar and Nowshera and northern slopes of Cherat hills consist of great slate series (Rose 1908: 145).

Marble

Marble is worked in Peshawar District near Naushahra and opposite Attock (Rose 1908: 49).

Sandstone

Salt Range: The stone is present throughout the western portion of Salt Range at Amb, Kalabagh, and Sheikh Budin hills and Surghar range. The lower part of the Salt Range consists of thick bedded soft sandstone of variegated colours followed by a series of white sandstone (Krishnan 1949: 371, 373).

Potwar Plateau: Fatehganj Series contain sandstone and also the Muree Series in the region (Krishnan 1949: 480).

Bannu Plain: Maree, Bhoogthi Hills and Sulaiman Range are principally composed of tertiary beds amongst which sandstones are the most conspicuous rocks (Smith 1882: 476).

Steatite

Kurram Agency: Beds of very high quality steatite occur within siliceous dolomite in the Safed Koh Range, which forms the Kurram Agency's northern border with Afghanistan. Steatite occurs northwest of Parachinar town in the Daradar Valley, an offshoot of the Kurram Valley on the southern flank of the Safed Koh (Law 2011:199).

Khyber Agency: Steatite occurs in dolomite around Landi Kotal area at Prang Dera. Also talc occurs in dolomite on western side of Peshawar valley (Law 2011: 201).

Peshawar district: Soapstone in metamorphosed Attock slate at Kund and nearby Kath Miani (Law 2011: 202).

Chitral district: In the Shi Shi Valley – an off-shoot of the Chitral Valley in the southern Chitral District, good quality steatite occurs in the Drosh ophiolite near the village of Tar (Law 2011: 202).

Raw Materials Available Outside The Sub-Region

PUNJAB

Amethyst

The amethyst stones are found in the Sutlej valley in Bashahr, Punjab (Brown 1936: 300; Wadia 1966: 161).

RAJASTHAN

Copper

Mines at Bagor, Ajitsagar, and Akwali Dhanaota in Jhunjhunu district are extensive with old workings and mines with old shafts up to thirty five meter depth. Slag heaps have been found at Bidasar in Bikaner district. Besides the Khetri copper belt spread over eighty kilometers is well known Reports on copper mining dating from the Mauryan period up to Gupta times here are known (Biswas 1996: 318-20).

Beryl

Rolled pieces of aquamarine were found among Sora hills near Rajmahal on the Banas (Ball 1881: 520-1).

Garnet, Topaz

Ball (1881: 523-24) noted the presence of extensive mines in the Aravalli schists at Sarwar in Kishengarh state, where large sized and good colour garnets are obtained. Other places where this stone occurs are Ajmer, Bhilwara, Jhnjhunu, Tonk and Udaipur district (Banerjee 192: 387).*The Periplus* notes that garnets of the best kind were found in Rajputana (Schoff 1995: 223).

Jasper, Agate and Chalcedony

Jaspers are commonly found in the Deccan Trap at Biana and Bharatpur (Mallet 1887: 72). Chalcedony and Agate are found scattered on the surface as secondary deposits associated to the Deccan Trap. Such minerals are found in a good quantity from the Bakani area in Jhalawar district (Dhoundiyal 1964: 12).

Marble

Pure white marble is quarried extensively at Makrana in Jodhpur district of northeast Rajasthan (Ball 1881:464; Brown 1936: 168).

Faience

Huge deposit of silica occurs south of Barodia village in the Bundi district (Dhoundiyal 1964: 7).

GUJARAT

Onyx: Onyx and other forms of chalcedonic agates are found near Beraja, Latipur, Jivapur in Jamnagar district (Patel 1970: 30).

TAMIL NADU

Pearls

The Gulf of Mannar between India and Sri Lanka on the east coast is a known centre where pearl oysters are found. Both Ptolemy and the author of the *Periplus* have described the country of 'Kareoi' that corresponds to South Tinneveli in the Kolkhic Gulf (Gulf of Mannar) as a place where pearl fishery was carried on. The pearl fishery in this sector has been specifically noted in the *Periplus* (McCrindle reprint 2000: 57).

SINDH

Shells

Shells and coral were probably procured from the coasts of Sindh and Baluchistan.

AFGHANISTAN

Lapis lazuli

Badakshan is famous for lapis lazuli which is not found anywhere in India (Mallet 1887: 99).

Silver

Extraction of silver is done from the auriferous galena in Kandahar, Afghanistan (Ball 1881: 232). La Touche (1918: 291) notes that the ancient lead mine at Faranjal in the Ghorband valley has extensive workings. Samples of the ore yielded 68% lead and 1 ½ oz of silver per ton of lead.

TURKESTAN

Jadetite

The Karkash Jade mines are situated in Kuenlun range. Fragments of jade are seen in most of the streams from the Kuenlun range. South of Khotan, there are other mines of great antiquity. These have been mentioned as early as two thousand years by Chinese authors (Ball 1881: 517-8).

Epigraphic,Literary and Artefactual Linkages

The northern region had strong ties with other regions, as the dynastic linkages and literary references suggest. The Shinkot casket inscription in the Bajaur territory and coins of Menander found as far as Begram near Kabul in the west and Mathura in the east with the capital at Sakala (Sialkot) show the Indo-Greeks presence over a large territory (Raychaudhuri 1996: 339, 374). The extent of the Indo-Greek presence is further known from the author of the *Periplus* which reports the use of coins of Menander at the port of Barygaza in present Gujarat (Raychoudhuri 1996:374). The Indo-Greeks were constantly pushed by the Parthians further into the Indian interior. Patanjali in *Mahabhasya* as well as the *Yuga Purana* refer toYavana raids in Mathura not directly but through Sabeta and Madhyamika in Southern Rajasthan (ed. Srinivasan 1989: 21). It is conjectured by Raychaudhuri that either Menander or Demetrius penetrated as far as Saketa in Oudh, Madhyamika near Chittor and river Sindhu in central India at the time of Pushyamitra (Raychaudhuri 1996: 340). Indo-Greek presence is attested by the find of their coins at some sites in Rajasthan. Coins have been found at Bairat and Sambhar, Nalisar-Sambar, Nagari and Ahar in Rajasthan (Hooja, 2006: 101). Nagari or ancient Madyamika was invaded by the Indo-Greek king Menander and is mentioned by grammarian Patanjali in the *Mahabhasya* (Chakrabarti 1997: 221). The Besnagar pillar inscription of Heliodorous, the Greek ambassador of King Antialkidas ruling from Taxila in the Potwar region is itself proof that the Indo-Greeks interacted with central India in the second century BC (Raychaudhuri 1996: 375).

In the subsequent period, the Kushanas overthrew the Saka-Parthian princes and established a vast empire in the northwest portion of the subcontinent from Kapisa-Gandhara to Benaras in north India (Raychaudhuri 1996: 418). The Sui Vihar inscription of Kanishka in the Bahawalpur division establishes Kushana domination over the region and around it. This included at least a portion of the lower Indus valley and possibly the area of northern Rajasthan (Hooja 2006: 102-3; Raychaudhuri 1996: 413). The author of *The Periplus* attests that the Saka rulers of west India were feudatories of the Kushanas and were paying tribute to them (Schoff 1995: 167). In this light, the extension of Kushana domination in western India is not improbable. Kushana coins of Huvishka are reported from Sambhar (Sahni 1999 reprint: 42-43;

1993-4:65). Aurel Stein, as reported by Hooja, found coins of Kadphises from old mounds explored in Suratgarh and Hanumangarh in north Rajasthan (Hooja 2006: 103). The Rang Mahal culture in the Bikaner region yielded Kushana period artifacts and coins of the rulers. Hanna Rydh opines that the area was settled during the period of Kanishka III in 192 A.D. (Rydh 1959:179-180).

One of the interesting aspects of resource procurement at Taxila was its contact with the Tamil land in South India for the procurement of pearls from the Pandyan territory of Korkai. Sangam poem *Manturaikkanci Maturai* (Madhurai) of the third century A.D. describes Korkai, as the centre of pearl fishery. *The Periplus of the Erythrean Sea* of the first century A.D. also mentions Kolchoi (Korkai) beyond Komari (Cape Comorin) as a region where diving for pearls was done and listed Kolchi as an emporium of the pearl trade. *The Periplus* specifies that fine pearls were obtained from fisheries of Gulf of Mannar and brought to be sold in the Chera ports (Schoff 1995: 222). It further notes that Ceylon or Taprobane exported pearls and transparent stones (Schoff 1995: 288). Ptolemy notes that the country of Kareoi (South Tinneveli) in the Kolkhic Gulf (Gulf of Mannar) has the pearl fisheries. Ptolemy listed "Colchi emporium" where trade in pearls was carried on (McCrindle 2000 reprint: 57-8).

Literary reference to this north-south contact is indicated in the Sangam poetical work Patirrupattu (The Ten Decades). It mentions a Chera chief Neduncheratadan who ruled over the land with the seas as his border. He went up on his conquering tour as far as the Himalayas, subjugated the Aryans and worsted the Yavanas (Subramaniam 1980: 2). Subsequently, the son of the Chera chief Senguttuvan is also described as the one who travelled to the Himalayas defeating two Aryan kings to obtain a stone to make the icon of Kannaki (Subramaniam 1980: 37; Nagaswamy 2006: 76). Kalidasa's *Raghuvamsa*, refers to the gift consisting of the best of pearls by the Pandyan King to the hero Raghu on his return from Lanka (Upadhyaya 1985: 521-23).

Sindh in the southern most region of Pakistan is another area with which Taxila was perhaps interacting. Coins of the Kushanas are known from sites like Mirpur Khas, Charsada, Sindh (Majumdar 1999:7, 18). A few inscriptions of Kushana kings have been recovered from Afghanistan and beyond. They are the Surkh Kotal near Baghlan, inscription at Wardak, west of Kabul and Airtam, east of Turmez in Uzbekistan (Shrava 1993:151,156,172-3). These certainly reflect the enormity of the

empire carved out by the Kushanas in the post-Mauryan period. This possibly helped in resource procurement from distant lands.

A survey of the above factors will tend to indicate that the Kushana rulers had a dominant hold over the silk route in the early centuries A.D. stretching from China, Central Asia, Indian subcontinent to West Asia. They possibly had access to different kinds of resources available. The procurement of Jadetite from Turkestan in this regard was not unlikely. Epigraphic evidence is there to support this contact as noted above. Silver and lapis lazuli was most likely procured from Afghanistan and amethyst and rock crystals from the Sutlej valley of Punjab. Rajasthan was one of the most rich resource zones for Taxila and the NWFP. The sector was dependent on this province for several resources. It was procuring raw materials like copper, semi-precious stones such as beryl, garnet; jasper and topaz were obtained from Rajasthan. Resources such as moonstone, onyx were procured from the Gujarat region. The Sindh coastline was the nearest area for obtaining shells and coral. The procurement of pearls from the Tamil land in the early Christian centuries into Taxila indicated the range of contact between these distant regions.

Jammu and Kashmir

Jammu and Kashmir is located in north India with its borders touching Afghanistan in the northwest, Pakistan in the west and China and Tibet in the north and east (Singh 1971: 347). The literary sources refer to very early historical beginnings here. The classical sources refer to a place called *Kaspapyros, Kaspatyros* and *Kaspeira*, supposedly an ancient city of Kashmir. According to *Rajatarangini,* Ashoka built a city in the valley and three Kushana kings also followed his example. Kalhana, the author of *Rajatarangini* specifically mentions three kings of the Kushana dynasty namely, Huska, Juska and Kanishka who according to him descended from the Turuska race. They built three towns na0mely, Huskapura, Juskpura and Kanishkapura and patronized Buddhism (Chakrabarti 1984: 113; 1997:182). Kashmir figures as an important region in the historical period for its geographical location. Its access to Central Asia on one hand and to China through Ladakh on the other was an advantage. Indo-Greeks ruled briefly in this region as is evidenced by the find of their silver coins by Alexander Cunningham on the banks of Jhelum River in the hills between Baramulla and Jhelum (Sodhi 2006: 30). Copper coins of Saka-Parthian

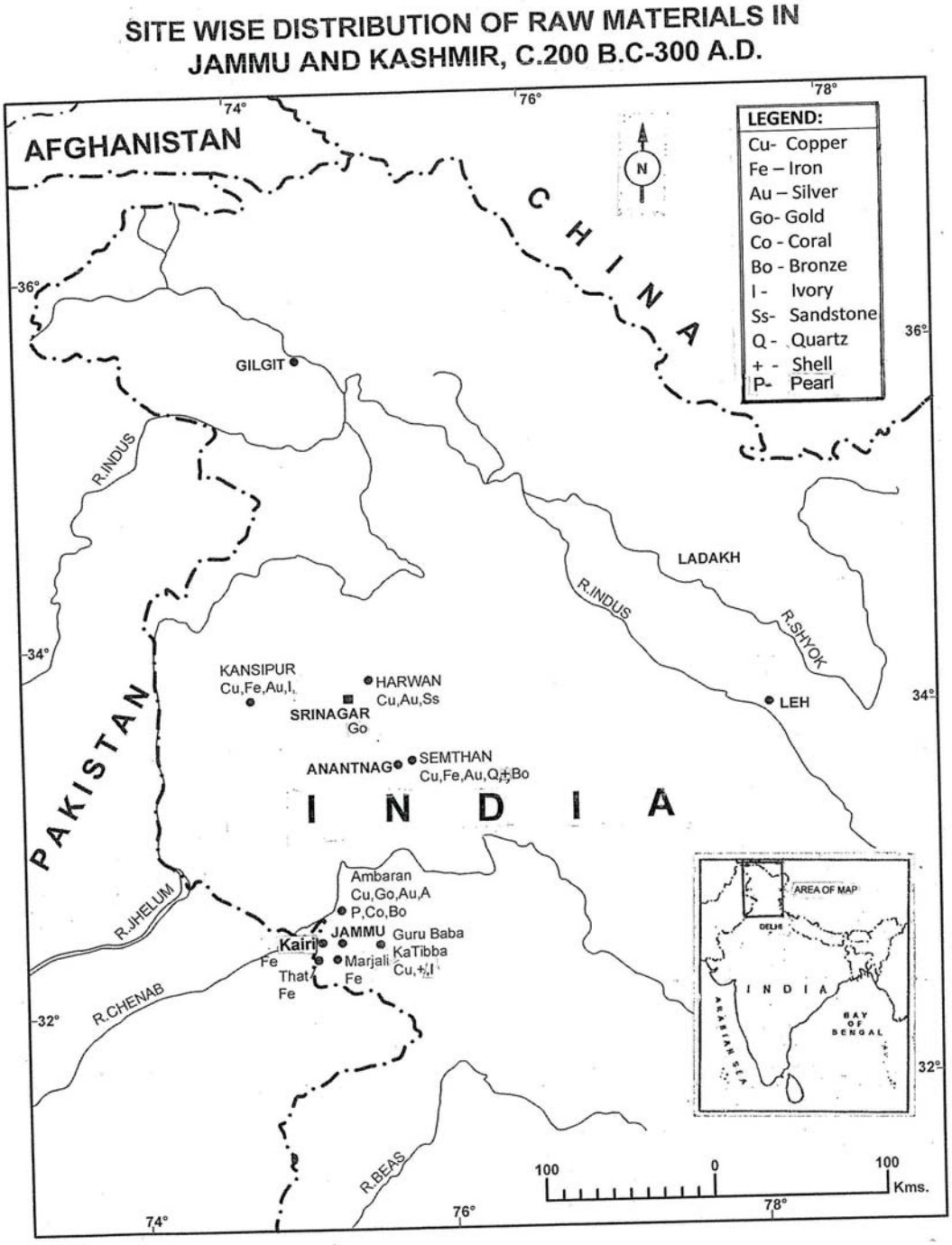
Chart 2a
Jammu and Kashmir----200 B.C. --300 A.D.

Raw Materials	*Semthan*	*Kairi*	*Marjali*	*Nargara*	*Partara*	*Thath*	*Tarakpora*	*Manda*	*Kansipur*
Copper/Bronze	objects, coins						coin hoard	antim-ony rods, coins	coins
Iron	objects	slag	slag	slag	slag	slag		daggers arrow-heads	nails, arrow-heads
Silver	coins								pendants, coins
Semi-Precious stones	Crystalline Quartz beads								
Ordinary Stone		unspecified querns, grinders	querns, grinders	unspecified querns, grinders	unspecified querns, grinders			stone caskets, rotary querns	lid, grinder
Shell	beads								
Ivory									bead

Chart 2a (continued)

Raw Materials	*Guru Baba Ka Tibba*	*Srinagar*	*Ambaran*	*Harwan*
Copper/Bronze	objects		coins, pieces	coins
Gold		coins	box, sheets	
Silver			box, sheets	coins
Semi-precious stones			Amethyst bead	
Pearl			micro beads	
Sandstone				red Sandstone sculptures
Shell/Coral	bangles		Coral beads	
Ivory	objects			

MAP-2


SITE WISE DISTRIBUTION OF RAW MATERIALS IN JAMMU AND KASHMIR, C.200 B.C-300 A.D.
AFGHANISTAN
CHINA
PAKISTAN
INDIA
LEGEND:
Cu- Copper
Fe – Iron
Au – Silver
Go- Gold
Co - Coral
Bo - Bronze
I - Ivory
Ss- Sandstone
Q - Quartz
+ - Shell
P- Pearl
N
GILGIT
R.INDUS
LADAKH
R.SHYOK
LEH
KANSIPUR
Cu,Fe,Au,I,
HARWAN
Cu,Au,Ss
SRINAGAR
Go
ANANTNAG
SEMTHAN
Cu,Fe,Au,Q,+,Bo
Ambaran
Cu,Go,Au,A
P,Co,Bo
JAMMU
Guru Baba
KaTibba
Cu,+,I
Kairi
Fe
That
Fe
Marjali
Fe
R.JHELUM
R.CHENAB
R.BEAS
AREA OF MAP
DELHI
INDIA
ARABIAN SEA
BAY OF BENGAL
100
0
100
Kms.
74°
76°
78°
36°
34°
32°

period have been found at Semthan (Shali 1993: 120). The route leading to Central Asia became significant under the Kushanas in the early centuries AD (Chakrabarti 1997: 182). Kushana rule is attested by the Buddhist records as well as coins of Kushana rulers such as Kanishka and Huviska recovered from sites such as, Semthan, Harwan, Ambaran, Manda, and Kansipur and so on. The fourth Buddhist council is supposed to have been held in Kashmir during the reign of Kanishka and is described by Huien Tsang who visited India in the seventh century AD (Sodhi 2006: 33).

Sitewise Distribution of Manufactured Objects

Chart 2a shows the raw materials used in this sub-region. They are, copper, iron, gold, silver, quartz, shell and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Kairi, Marjali, Nargana, Partara and Thath in the Jammu district yielded iron slag in large numbers (IAR 1980-81:25-6).

Character of Sites and Distribution of Manufactured Objects

The region has several sites associated with Buddhism that were patronized by the Kushana rulers. The urban sites in the region are Semthan, Manda and Kansipur, and Kotbal Anantnag (Gaur 1987:331-5; IAR 1976-77: 21; IAR 1998-99:30; Ahmed 2007: 100). Semthan, in Anantnag district was part of ancient *Vijayshetra* and was occupied from the middle of first millennium B.C. till late medieval period. Indo-Greek, Saka-Partian and Kushana coins and sealing were reported from here (Shali 1993: 120). A clay seal of the Indo-Greek period was found at Semthan (IAR 1980-81:21). Period IV at Semthan is assigned from the first to the fifth century A.D. and was largely under the Kushana rulers. Building activity in the form of mud bricks, rubble and diaper pebble walls with associated floor levels were noted here. Kotbal Anantnag under the Kushanas who ruled from the first to the fourth century A.D. revealed a tile pavement probably meant for some religious purpose. Human motifs are depicted on these tiles (Ahmed 2007: 100). At Ushkar, remains of a Buddhist stupa were found scattered all along the ground. It is believed to have been founded by Huviska (Ahmed 2007: 106). Manda in Jammu is an important urban site with Harappan remains. But the site also has a substantial Kushana level (IAR 1976-77: 21). Kansipur in the Baramulla district is identified with Kanishkapura mentioned by

Kalhana in the *Rajatarangini*. According to the text, the Turushka king Kanishka of Kushana dynasty founded the city (IAR 1998-99:30). A regular habitational deposit was found here that represented the township of Kanishkapura. A random rubble wall was found in excavations (Mani 1999-2000: 12).

The typical religious sites of this region include Harwan and Ambaran. Harwan is a few kilometers from Lal Chowk and has the foundation of a monastic establishment with a stupa and chaitya, and a large apsidal temple was also excavated here (Ahmed 2007: 88-9; Chakrabarti 1984: 115). It was excavated partially and yielded cultural materials which are of Buddhist attribution. It has been presumed that Kanishka held the fourth Buddhist council here in the second century A.D. (Shali 1993: 131). Structures are noted with stones arranged in diaper-pattern of the Kushana period. It has a fascinating and large collection of terracotta tiles and pebble walls. Kushana sculptures carved on red sandstone have been obtained from these structures at Harwan in large numbers (Shali 1993: 133-4). Tiles with Kharosthi script dated c.300 A.D. have been discovered along with silver and copper coins of Kushana rulers (Chakrabarti 1984: 115). Ambaran in Jammu district is famous for the Akhnur Buddhist terracottas. The site has the remains of a monastic establishment, stupa, and votive stupas of burnt brick masonry in a large complex that survived till the fourth century A.D. (IAR 1999-2000: 60-61; Mani 2004: 395).

The urban sites have yielded artifacts of copper mainly in the form of coins, antimony rods and unspecified objects. Iron has been utilized in form of weapons such as, daggers, arrowheads, nails, and knives. Sporadic finds of silver coins and pendants from Semthan, Kansipur and Harwan, while silver box and sheets have been reported from Ambaran. Gold is rare with just one coin from Srinagar. Beads of semi-precious stones such as crystalline quartz have been found at Semthan and amethyst and pearl micro beads are reported from Ambaran. Red sandstone sculptures have been found at Harwan. Beads and arrowheads in ivory have been found from the urban sites. In all, the nature and volume of artifacts from all the urban areas is mostly confined to coins and structural remains specifically attributed to the Buddhist faith.

The small sites in the region are Nargara, Kairi, Marjali, Partara, Thath and Guru Baba ka Tibba are all in Jammu district. The first few sites have notably yielded iron slags besides stone querns and mullers (IAR 1980-81: 25-26). Guru Baba ka Tibba has produced unspecified objects of copper, shell and ivory.

Raw Materials Available Within The Sub-Region

Gold

In the Ladakh district, gravels in the valleys of Dras, Suru and Indus have been worked for placer gold from time to time in the past (Ziauddin and Narayanswami 1974: 139).

Iron

This could have been obtained at Sof in south of Kashmir (I.G.I. Jammu and Kashmir 1909: 68). Additionally, sulphate of iron is known to occur in what used to be Khardang mine in Ladakh tehsil of Kashmir (Brown 1936:232). In earlier days, sulphur, salt petre and iron were manufactured in factories of Leh (I.G.I. Jammu and Kashmir 1909: 100).

Copper

Native copper is obtained from the lower part of Zanskar river (Mallet 1887: 4). Copper ores including sulphides, oxides and carbonates occur in Shumahar area in Anantnag district, in Lidar valley in the quartz veins associated with lead ores and in the Kangan area in Srinagar district (Wadia 1966: 125).

Galena

Lead ore (galena) is known to occur in Buniyar area, Baramulla district in the quartz veins. Disseminations and veins of galena occur around Nigote in the Udhampur district (Wadia 1966: 116).

Rock Crystal

The occurrence of rock crystal has been noted by Brown (1936: 300). Mallet (1887: 65) has noted crystals in Rambakla fifteen miles southwest of Leh.

Amethyst

Amethyst occurs with sapphires in the Zanskar range (Mallet 1887: 68).

Sandstone

Cobbles of grey sandstone occur within the formation of the Siwalik foothills and in beds of Chenab, Sutlej, Beas rivers (Walton 1910: 7; Law 2011: 121).

Ivory

Elephants were possibly found in the areas under forest cover in the Himalayan region.

Raw Materials Available Outside The Sub-Region

The availability of pearl from Tamil Nadu has been mentioned on p.32

SINDH

Shells

Shells and coral were probably procured from the coasts of Sindh and Baluchistan.

Epigraphic,Literary and Artefactual Linkages

The coins found here of the Kushanas suggest this was a part of their empire.

Kashmir used resources such as iron, copper, gold and rock crystal, many of which were available within the region. Small sites such as Kairi, Marjali, and Partara and Thath show evidence of manufacture in form of iron slags that possibly exploited the available iron resources. The resources procured from outside were most likely to be shells and pearl and silver given the presence in Sindh and Punjab. Since pearls and shells were used in contemporary cities of the northwest such as Taxila, it is likely that they mediated the traffic of such objects to Kashmir.

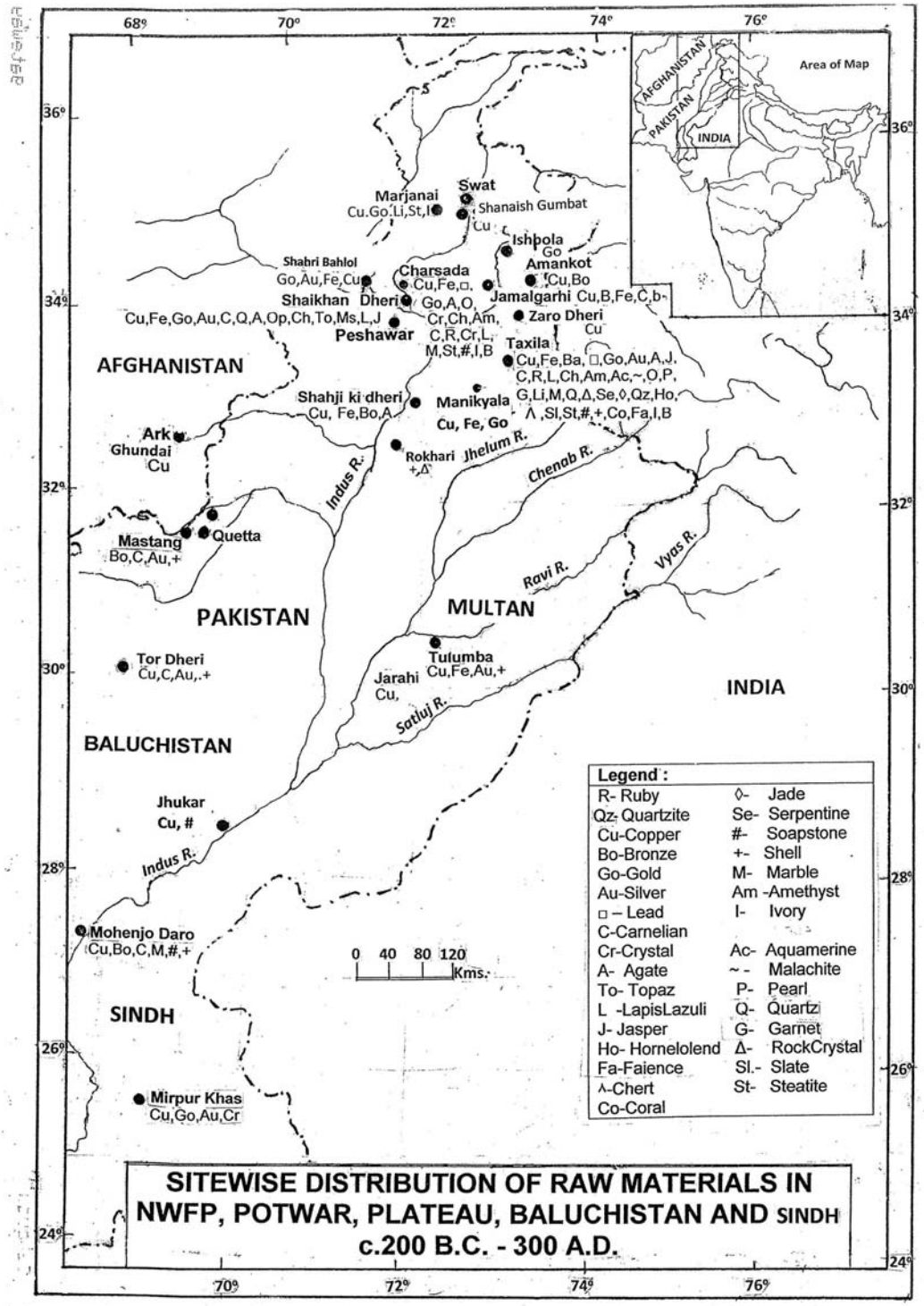
Sindh

Sindh situated in the lower Indus valley, is known in classical Indian literature as Sindu. The chroniclers of Alexander (c. 326 B.C.) in their accounts mention this area. The area between the north of Hindukush and the Indus including both Punjab and Sindh as a whole witnessed the rule of the Indo-Greeks and Indo-Parthians in the period between c. 250 B.C. to first century A.D. Thereafter, the Kushana kings carved out an empire beyond this zone (Chakrabarti 1995:274). Sindh was significant in the early centuries A.D. as part of the Kushana Empire and participated in the Indo-Roman trade

Chart 3a
Sindh—c.200 B.C.-300 A.D.

Raw Materials	*Mirpur Khas*	*Mohenjo-Daro*	*Luni Mound*	*Jhukar*	*Tharo hill*
Copper/Bronze	coins,finger-rings	coins,beads Bronze beads		coins	
Gold	beads,wire,ring				
Silver	cup,case		coins		
Semi-Precious Stones	Crystal beads, bottle	Carnelian pipes			
Ordinary Stones		Marble casket	dice		Limestone ball
Soap-Stone		Soapstone seal		Soapstone plaque	
Shell/Coral		Conch shell, vessels, lid bangles, ornaments			bangle piece
Ivory				pin, beads, comb	

MAP-3


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
AFGHANISTAN
PAKISTAN
INDIA
Area of Map
Marjanai
Cu.Go.Li,St,I
Swat
Shanaish Gumbat
Cu
Ishpola
Go
Amankot
Cu,Bo
Shahri Bahlol
Go,Au,Fe,Cu
Charsada
Cu,Fe,□,
Shaikhan Dheri
Go,A,O
Jamalgarhi Cu,B,Fe,C,b
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
Cr,Ch,Am,
C,R,Cr,L,
M,St,#,I,B
Zaro Dheri
Cu
Taxila
Cu,Fe,Ba,□,Go,Au,A,J,
C,R,L,Ch,Am,Ac,~,O,P,
G,Li,M,Q,Δ,Se,◊,Qz,Ho,
Λ ,Sl,St,#,+,Co,Fa,I,B
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu, Fe, Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dheri
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu, #
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
Λ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c.200 B.C. - 300 A.D.

(Chakrabarti 1995:183-4). Coins of Kushana and Indo-Greek rulers were found in this region. Coins of these rulers have been found from sites such as Mirpur Khas, Mohenjodaro in Sindh (Cousens 1909-10: 90; 1922-3: 103; P.A. No. 4, 1967:1, 3).

Sitewise Distribution Of Manufactured Objects

Chart 3a lists the resources used in the region. They are copper, iron, silver, carnelian and shell.

Evidence of Manufacture of Finished Products At Different Sites

Beads: At Depar Ghangro in Sindh, houses with basketful of chips of all kinds of stones in drilled and undrilled state were found. Several unfinished beads were also noted here (Cousens 1929: 60).

Character of Sites and Distribution of Manufactured Objects

There are several Buddhist stupa sites in Sindh. Mirpur-Khas is one such site. Cousens dated the stupa of Kahujo-Daro near Mirpur Khas to c.400 A.D. or earlier. The bricks of the walls of the monastery give us a plan similar to the Gandhara monasteries as observed by him (Cousens 1929: 96; Leeuw 1975: 159).These contained some pieces of crystal and amethyst. Hundreds of unburnt clay votive tablets were found scattered in the debris (Cousens 1909-10: 81-83). Another stupa at Sudheranjo-Daro was found in the vicinity.According to Dr. Bhandarkar, the original stupa at Sudheranjo-Daro cannot be later than the time of Kanishka in c.100 A.D. (Cousens 1929: 105). Mohenjodaro in the Larkana district of Sindh, a well known site for its urban planning during the Harappan period, was marked by a stupa and monastery, excavated by R.D. Banerjee (Leeuw 1975: 154-5). Coins of Kushana rulers and relic caskets along with other artifacts of the Kushana period have been found here (ARASI 1922-3: 103). Sawandi, a huge Buddhist establishment has been identified by Cousens at the site of Depar-Ghangro. It was considered by Cousens (1929: 105) to have been built by the king of Kashmir.

The urban sites here used copper mostly as coins, beads and finger-rings. Bronze was used as much as copper. The bronze artifacts were mainly beads, centaur image and vessel. The fragment of a bronze coin issued by Greek rulers is also noted. Urban sites such as Mohenjo daro have yielded carnelian pipes. This kind of usage is not common for semi-

precious stone such as carnelian. Marble, limestone and soapstone were in the form of casket, disc and seal respectively. Shell was mainly used as bangles, beads and vessels.

The usage of raw materials in these urban areas showed some variety. Bronze was used as beads at Mohenjodaro. It is not clear whether the carnelian pipe found at Mohenjodaro was used as a pendant or not. At Mirpur Khas, one may point at the usage of gold in form of cups and wiring. Silver too was used in form of cups and cases. These precious metals were not typically used in ornaments. The second category of small urban sites in Sindh are Jhukar in Upper Sindh in the Larkana district. At Jhukar, rooms of varying sizes in houses possibly of pre-Gupta period and coins of Kushana rulers have been found (Majumdar 1927-28: 78).

Raw Materials Available Within The Sub-Region

Shells: Marine shells came from coastal areas.

Agate: The agate deposits of Sindh are small and sporadic. A source is reportedly located at Nagar Parker in the southeastern corner of Sindh near the northern shore of the Great Rann of Kutch. It is quite possibly related to the agate deposits directly to the south on the opposite side of the Rann in eastern Kutch (Law 2011: 280). Agate also occurs in part of the Sindh Kohistan's Laki Range, a north-south running chain of hills that forms part of the western boundary of the Indus Valley, W.T. Blanford first reported (1869: 5-6) "trap" rock that is "slightly amygdaloidal and contains agates." He later identified these thin, weathered beds of basalt and volcanic tuff as distant outliers of the Deccan Traps (Law 2011: 280).

Raw Materials Available Outside the Sub-Region

The presence of silver and lapis lazuli (Afghanistan) has been noted (p.31).

NWFP

The availability of gold has been noted on p. 26.

Copper

Lahiri (1992: 150) has noted some 'showings' of copper ore in Chitral and Waziristan. La Touche (1918: 204) has noted fragments of copper and earthy iron heamatite in the Salt Range.

Iron

The presence of ores have been noted on p.26.

Soapstone

Lahiri (1992:35) has noted two steatite bearing localities at Kangrara in the North-West Frontier Province, thirty miles from Abbottabad and in Nowshera tehsil of the Peshawar district. Old pits in altered Attock shales near Khund are reported.

Ivory

There are some mountain forests in NWFP and elephants might have formed part of this zone.

Epigraphic, Literary and Artefactual Linkages

That Sindh was part of the empire of the Kushanas has already been discussed. Like many other Kushana period sites the region of Sindh is dotted with Buddhist stupa sites. Urban sites of Mohenjodaro revealed the existence of a stupa and monastery indicating its continuous importance. Bead manufacturing with regard to unfinished beads and undrilled raw material was noted at Depar Ghangro in Sindh. This territory, it seems was significantly dependent on adjoining regions for procurement of raw materials. Such resource regions were the NWFP in the north for copper, iron, gold and soapstone. Sindh was possibly depending upon resources such as silver and lapis lazuli from Afghanistan. Shell, agate and carnelian as also some other varieties of semi-precious stones were procured from within. On the basis of the survey above, it can be understood that this area was interacting with the nearby adjoining regions.

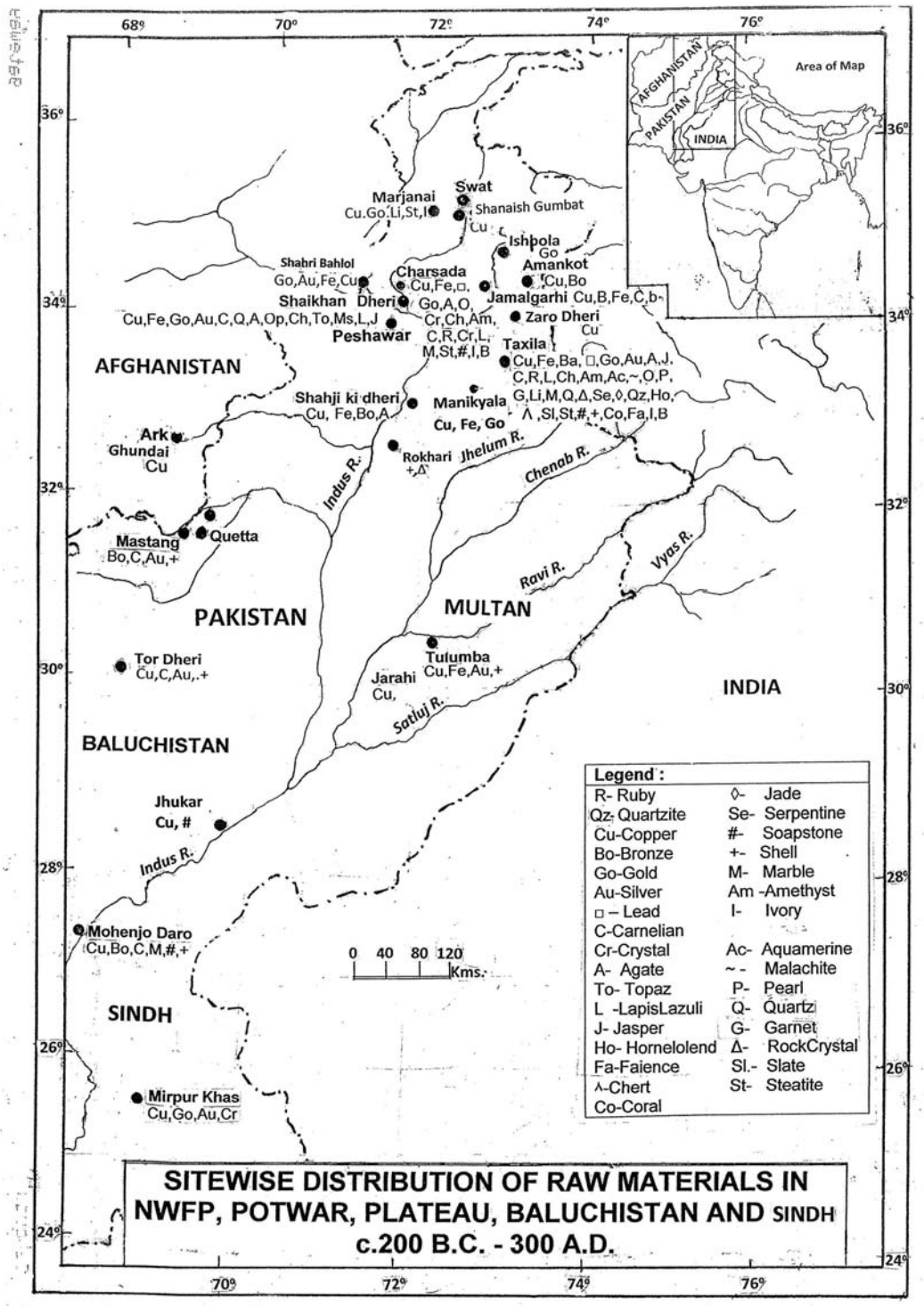
Multan

The region is located in the south east direction of the NWFP. It is better known as the Punjab-Multan region and lies in the Pakistan portion of Punjab. Prominent sites in this region are Tulumba, Bagar and Ratti Tehri Bhir in Multan district, Jarahi, on the Tulumba distributary (Mughal PA no. 4 1967:1, 3, 16). The region witnessed a considerable degree of Indo-Greek influence from second century BC to first century BC. Saka rule here is also attested by the large number of Indo-Scythian coins collected from Shorkot (Mughal 1967: 21).

Chart 3.1a
Multan---c.200 B.C.----300A.D.

Raw Materials	*Jarahi*	*Bagar*	*Tulumba*
Copper/Bronze	coins bangles,dish		objects, coins, bangles
Iron		nails,hooks, knives, blades	objects, bangles
Silver			coins
Semi-Precious Stones		unspecified beads, Carnelian necklace	unspecified beads
Ordinary Stones		grinding plates, stones, sling, balls	unspecified whetstones
Shell		bangles	bangles

MAP-3.1


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu.Go.Li,St,I
Swat
Shanaish Gumbat
Cu
Ishpola
Go
Amankot
Cu,Bo
Shahri Bahlol
Go,Au,Fe,Cu
Charsada
Cu,Fe,□,
Jamalgarhi Cu,B,Fe,C,b
Shaikhan Dheri
Go,A,O,
Cr,Ch,Am,
Zaro Dheri
Cu
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
C,R,Cr,L,
M,St,#,I,B
Taxila
Cu,Fe,Ba,□,Go,Au,A,J,
C,R,L,Ch,Am,Ac,~,O,P,
G,Li,M,Q,Δ,Se,◊,Qz,Ho,
Λ ,Sl,St,#,+,Co,Fa,I,B
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu, Fe, Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dheri
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu, #
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
Λ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c.200 B.C. - 300 A.D.

Sitewise distribution of Raw Materials

Chart 3.1a shows the raw materials used in the region. They are, copper, iron, carnelian and shell.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been recorded in the post-Mauryan period.

Character of Sites and Distribution of Manufactured Objects

A prominent urban site of this region is Tulumba. The site is locally called Tulumba bhir. Copper and silver coins and iron objects were found at Tulumba. Resource usage shows use of limited raw materials. Silver coins here belonged to the Indo-Greek ruler Apollodotus. However, most of the objects have not been specified (Mughal 1967: 130). Copper coins of Indo-Greeks have also been found at Jarahi (PA no. 4, 1967:1). Bagar yielded pottery of the period between the first and third century A.D. and Ratti Tehri Bhir yielded copper coin of Indo-Greek king Apollodotus (PA no.4 1967:3). Bagar yielded iron artifacts in form of objects such as nails, hooks, and knifes and blades. Silver coins were found at Luni mound, while beads of unspecified semi-precious stone and a carnelian necklace is a notable artifact at Bagar. Shell has been used as bangles.

Raw Materials Available Within The Sub-Region

No raw material here was available within the sub-region.

Raw Materials Available Outside The Sub-Region

NWFP

Raw materials such as copper, iron, and chalcedony are available in the Salt Range and the NWFP and their presence have been noted on p. 26, and 27.

AFGHANISTAN

The presence of silver has been noted on p.31.

SINDH

Shells: Shell was available along the Sindh coastline and was accessed by the Multan region.

Epigraphic, Literary and Artefactual Linkages

The entire region from Bactria, NWFP, Multan and Sindh were ruled by the Indo-Greeks and Kushana rulers. Presence of Indo-Greek rulers is attested by their coins found from different sites of this region. It is most likely that raw materials were exchanged within this region. The raw materials were obtained from the NWFP, Afghanistan and Sindh.

Baluchistan

Baluchistan is situated in the south-west region of present day Pakistan. It was a region of importance in antiquity and has a few sites of the historical period. They are Mastung in the Sarawan division, Chaudhwan in the Waziristan border, Ark Ghundai near Bannu, and Tor Dherai of Loralai district (Hargreaves 1929 reprint 1981; Stein 1929).

Sitewise Distribution Of Manufactured Objects

Chart 4a shows the resources used in this region. They are bronze, silver, limestone, and shell.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been found at any of the sites in Baluchistan.

Character of Sites and Distribution of Manufactured Objects

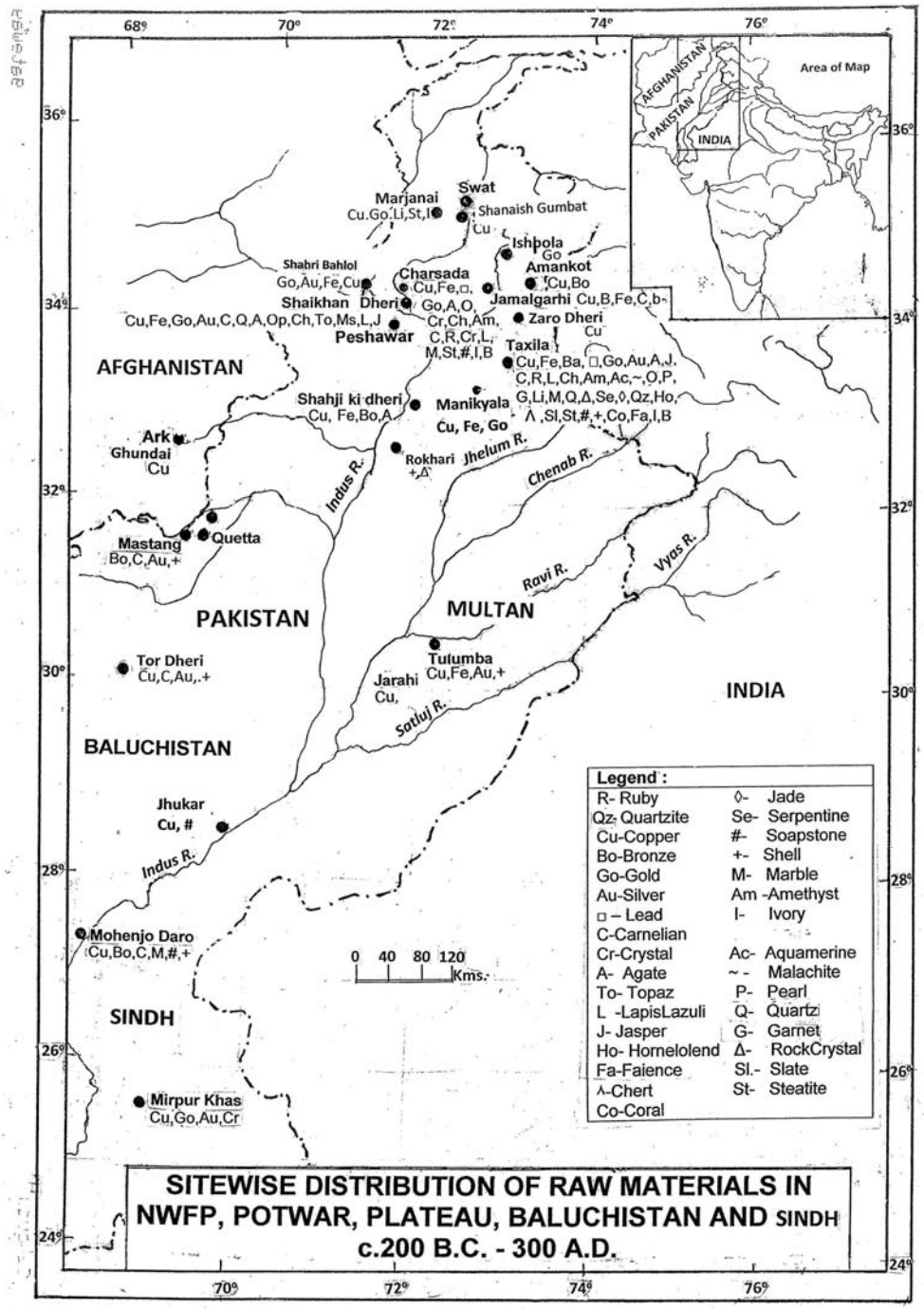
Mastung in the Sarawan division of the Kalat state of Baluchistan is the second largest town in the area. It was occupied for some considerable time before and after the Christian era. Copper coins and artifacts of the Indo-Scythian rulers (Hargreaves 1998: 4, 12). Here we find artifacts such as silver cup of the Indo-Parthian period dated to the first century AD and a fragment of a Greek bronze coin, bronze vessels as well as coins of Indo-Scythian rulers were also found (Hargreaves 1998: 9). The mound exposed in excavations revealed the structure of a small room. The walls were of *kachha* bricks faced with mud plaster. As observed by Hargreaves (1929: 3) the highest point of the mound must have had the existence of either a large and important building such as a citadel or temple. Interestingly, a shaft of mud brick was exposed in a rectangular pit in a trench. It might have served as a drain or even a grain pit as observed by Hargreaves (1929: 2).

Chart 4a

Baluchistan—c.200 B.C.-300 A.D.

Raw Materials	*Mastung*	*Tor Dherai*	*Ark-Ghundai*
Copper/Bronze	Bronze vessel, centaur,Bronze, fragment of coin, Copper coins,pieces	coins	coins
Iron	pieces		
Gold	jewels in Gold setting		
Silver	cups		
Semi-precious stone		Crystal, Onyx beads	
Pearls		beads	
Ordinary Stone	limestone disc		
Shell/Coral	beads	coral beads	

MAP-4


Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu.Go.Li,St,I
Swat
Shanaish Gumbat
Cu
Ishpola
Go
Amankot
Cu,Bo
Shahri Bahlol
Go,Au,Fe,Cu
Charsada
Cu,Fe,□,
Shaikhan Dheri
Go,A,O,
Cr,Ch,Am,
C,R,Cr,L,
M,St,#,I,B
Jamalgarhi Cu,B,Fe,C,b
Zaro Dheri
Cu
Peshawar
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Taxila
Cu,Fe,Ba, □,Go,Au,A,J,
C,R,L,Ch,Am,Ac,~,O,P,
G,Li,M,Q,Δ,Se,◊,Qz,Ho,
Λ ,Sl,St,#,+,Co,Fa,I,B
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu, Fe, Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tutumba
Cu,Fe,Au,+
Tor Dheri
Cu,C,Au,.+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu, #
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
Λ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c.200 B.C. - 300 A.D.

The other sites of Waziristan and northern Baluchistan are Chaudhwan mound near the Waziristan border. Here, painted pottery was recovered dated to the late Indo-Parthian period (Stein 1929: 8). Remains of a stupa were exposed at Ark-Ghundai near Idak (Stein 1929: 15). The hillock exposed rough stones which once belonged to walls of dwellings and towers. The stupa located in the southwestern part of the hillock has massive enclosing walls of dressed stones located near it. Copper coins of Kanishka and other Kushana coins were collected from here (Stein 1929: 15). An inscribed boulder on hillocks at Dre-dhere was located on the road connecting the Toch valley with Thal. The inscribed stone contains a four line inscription in Kharosthi of the Kushana period (Stein 1929: 16). A few ruined suites were located in the Loralai district. Buddhist remains were exposed at Tor-Dherai. These were slabs; some of them had roughly carved floral designs of Graeco-Buddhist style. The existence of a stupa was proved by the discovery of the relic casket in earthenware (Stein 1929: 64-66). It contained beads and jewel pieces and, numerous potsherds inscribed in Kharosthi and Brahmi in characters of Kushana period were recovered (Stein 1929: 68). The masonry of the walls proves that the site and the stupa existed from the first to the fourth century A.D. (Stein 1929:68). Sten Konow observed that the script of the inscriptions with the use of *'shahi'* as title for the donor indicated that Kushana rule existed in this part of Baluchistan (Stein 1929: 69).

Raw Materials Available Within The Sub-Region

Copper

Abundance of copper ore is noted in the Las Bela district (Ball 1881: 264). Occurences of copper ore have been noted by La Touche (1918: 115) to the south of Bela.

Iron

Iron ore occurs on the Dilband Plateau, Mastung district, Kalat division. The ore bed is 2 metres thick having fairly widespread exposure. The main content of the ore is haematite while quartz, calcite and chlorite occur as gangue minerals. Magnetite and haematite ores also occur at Pachin Koh and Chilghazi (Geol. Survey of Pakistan 1997:32). The presence of haematite in the Chagai district at Robat Koh and Malik-i-Siah Koh has also been noted (Lahiri (1992:75). Lava in the neighbourhood of Koh-i-Sultan contains sulphates of iron and alumina. The sulphate of iron is brought from

Kahar district north of Zhob valley. Iron occurs as sulphate of copper in the Jhalawan district at Ladon Pass and Kil Chotok (La Touche 1918: 466).

Shell

Marine shells are found in coastal Baluchistan.

Limestone

Quetta: Liassic beds are succeeded by massive limestones which are well exposed near Quetta and in nearby calcareous zones (Krishnan 1949: 376).

Jhalawan district: Limestones form prominent hill masses in calcareous zone of Jhalawan in the hills of Zaradak, Anjiro and Sumbaji in Jhalawan (Krishnan 1949: 376).

Sarawan district: Limestones occur at Chehiltan and Koh-i-Maran in Sarawan district (Krishnan 1959: 376).

Onyx

Agates and jasper were possibly present in the hills east of Kalat, near 'Shalkoh' (Lahiri 1992: 22). Further, she observes that onyx being a sub-variety of agate was probably also available in Baluchistan (1992: 111).

Raw Materials Available Outside The Sub-Region

NWFP

Gold

Washing of gold in the region has been noted on p.26.

Crystal

Bi-pyramidal quartz crystals are found in the gypsum of the salt marl near Kalabagh on the Indus (I.G.I. 1908: 162).

AFGHANISTAN

Silver

Occurences of silver have been noted on p.31.

Tin

The region has two zones of tin mineralization. One, is in eastern Afghanistan, from south of Kandahar to Badakshan; the other lies towards Herat. Here, tin appears commonly as cassiterite, frequently associated with other metals (Moorey 1999:299).

Epigraphic,Literary and Artefactual Linkages

It can be postulated that Baluchistan and its adjoining regions were part of this vast Kushana empire. The survey revealed that Baluchistan was using few resources such as, shells, copper, iron, limestone and onyx which were available within the region. Certain resources were procured from the other regions. Raw materials such as silver were possibly obtained from Afghanistan in the northwest while gold and crystal were procured from the NWFP. No evidence of manufacture of objects has been reported in this region. The region obtained its resources from sub-regions outside it as part of the vast Kushana empire.

Uttarakhand and Himachal Pradesh

Uttarakhand popularly known as 'Kumaon Himalayas' includes Kumaon division and the Garhwal division; Dehra Dun is the largest city in the region. It is separated by the *Tons* River in Himachal Pradesh extending up to Kali nadi in Nepal in the east. During early times the Himachal region was known as '*Dev Bhoomi*' (Singh 1971: 347,443). The entire region was predominantly inhabited by small tribal republics occupying territories of northwestern Punjab and the adjoining hills. Audumbaras, Trigaratas and Kunindas and Kulatas were the most prominent of them. It is probable that these republics rose to prominence only after the decline of Indo-Greeks and Kushana power in the hilly tracts. The earliest epigraphic records of the hills are the two rock-cut inscriptions at Pathyar and Kanhaira in the Kangra district in the Himachal belonging to the Mauraya and the Kushanas respectively (*Gazetteer Of India:* Himachal Pradesh: Chamba District 1963: 80). The following districts in Uttarakhand yielded Kushana period artifacts and red ware. These are Rishikesh (Dehra Dun district), Pilibhit, Pauri Garhwal, Thapli (Tehri Garhwal district), Uttarkashi and Kashipur in Nainital district (IAR 1973-4:28-9; 1975-6:57; 1982-3: 99,103; 1986-7:77, 81; 1963-4: 53; 1966-7:43)

Chart 5a
Uttarakhand and Himachal Pradesh --- c.200 B.C.—300 A.D.

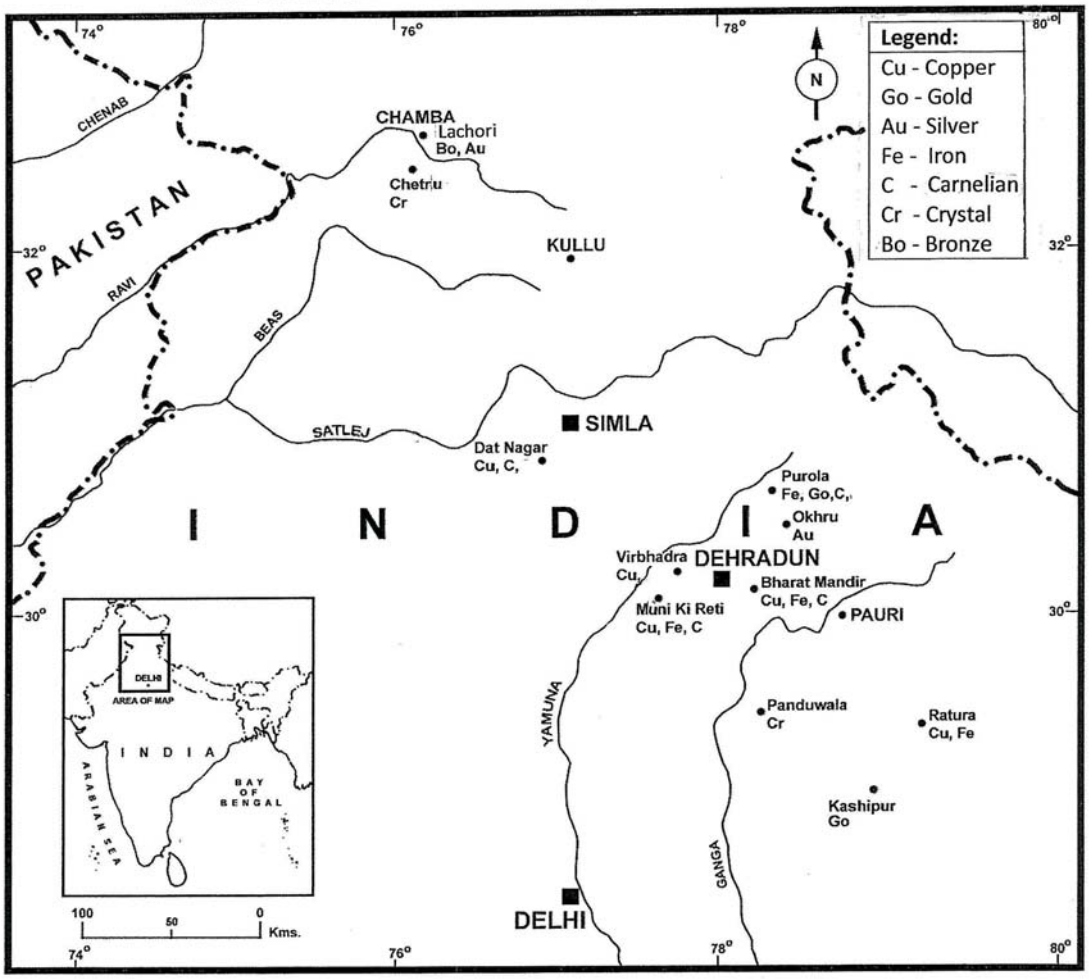
Raw Materials	*Kashipur*	*Virbhadra Temple Rishikesh*	*Muni-ki-Ret*	*Bharat Mandir*	*Panduwala*	*Ratura*	*Purola*
Copper/Bronze		coin		bangles,antimony rods,earrings		antimony rods,tribal coins	
Iron	coina			implements		arrowheads, nails	axe
Gold	coins		coins, chains, earrings				pendant, small chain
Semi-Precious stone				Carnelian beads	Crystal beads		Carnelian beads

Chart 5a
Uttarakhand and Himachal Pradesh--- c.200 B.C.—300 A.D.

Raw Materials	*Dat Nagar*	*Tehri Garhwal*	*Lachori*	*Chetru*	*Okhru*
Copper/Bronze	objects		bronze vessel		
Gold		coins			
Silver			coins		coins
Semi-Precious stone	Carnelian beads			Crystal bead	
Ordinary Stone	unspecified stone sculpture				

MAP-5

SITE WISE DISTRIBUTION OF RAW MATERIALS IN UTTRAKHAND AND HIMACHAL PRADESH, c. 200 B.C. - 300 A.D.



Sitewise Distribution Of Manufactured Objects

Chart 5a shows the different raw materials used here. These are copper, bronze, iron, gold, silver, carnelian, and crystal.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been found in this region.

Character of Sites and Distribution of Manufactured Objects

The Uttarakhand and the Himachal regions were mostly occupied by tribal republics such as Audumbaras in Kangra area, Kunindas in the regions where the Yamuna, Beas and Sutlej originate, Kulutas in the Kulu valley in Himachal, and the Yaudheyas and Arjunayanas in the southeast of Himachal region and so on. The Himachal region has revealed coins of Indo-Greeks from Lachori and Sarol in the Chamba district. The spread of Graeco-Bactrian rule is known from their coins in the Chamba and Hamirpur districts of Himachal Pradesh (Aluwalia 1988: 19). Coins dated to the third century AD in the Himachal region of the tribal republics such as the Audumbaras, Kunindas from the Jwala Mukhi, Pathankot, Trippal, and Hoshiarpur were found at the foothills of the Siwalik Hills between the Yamuna and the Satluj (Charak 1978: 51). These contained legends in Brahmi and Kharosthi indicating that these tribal republics probably came under the influence of the Kshatrapa rulers. Audumbara coins and coin hoard at sites such as Pathankot and Trippal are reported alongwith coins of Greeks, Indo-Parthian and Kushana kings (Charak 1978: 51, 78). Dat Nagar in Simla district is a site described as an 'urban Kushana settlement'. It yielded coins of Kushana rulers and other artifacts such as stone sculptures (IAR 1992-93:36).

Kansipur (Nainital District), Virbhadra (Rishikesh), Muni-ki-Reti (Tehri Garhwal), Bharat Mandir (Dehra Dun), Ratura and Panduwala (Pauri Garhwal), Purola (Uttar Kashi)in Uttarakhand and Lachori (Chamba) and Chetru (Kangra District) in the Himachal region are the other sites of this region. From Purola in the Garhwal region in Uttarakhand, coins of Kuninda rulers who ruled between the second and the fourth century A.D. was recovered alongwith Sunga-Kushana pottery (ed. Banerjee A. 2006: 398). Period IB at Bharat Mandir revealed a Kushana settlement. Three sizes of bricks were recovered and structural remains of walls and floors made of bricks were

recovered. A couple of houses with remains having rooms, kitchen and bathroom were recovered (Pushp Lata Singh 2005: 151). Okhru, a village site in Solan district of Himachal Pradesh yielded silver coins of Kunindas (Kaushal 1988: 16). Similarly, Kuninda coins of copper and silver have been found in the Almora district in Uttarakhand and Tappa Mewa in Hamirpur district of Himachal (Agarwal and Khrakwal 1998: 153; Charak 1978: 84). Ranihat in the Alaknanda Valley in the Garhwal Himalaya revealed structures of bricks and stones. A brick stone pavement and red ware pottery was found at this site in the Uttarakhand (Khanduri 1994: 37). Period II A has a late NBPW level at Ranihat where brickbats were used in the construction of houses (Pushp Lata Singh 2005: 156). Kushana period pottery has been recovered from Bibhandeshwar near Dwarhat in Kumaon district (Agarwal and Kharakwal 1998: 154). It is observed by Agarwal and Kharakwal (1998:154) that towards the third century A.D., the tribal confederacies of Yaudheyas, Kunindas and Arjunayanas drove away the Kushanas. It is supported by the find of Ashwamedha brick-altar inscription at three sites by a king named Silavarman of the third century AD at Jagatgram in Dehradun district. The palaeography of the inscription places Silavarman in the post-Kushana period (A.D. 250-300) and is recorded as one of the many tribal dynasties who gave a death blow to the Kushana power in north India (IAR 1953-4: 10-11). From Virabhadra in Dehradun district, structural remains and pottery of the early Christian centuries were identified. Copper coins of Kushanas were also found here (IAR 1973-4: 29; 1974-5: 41). Kushana period structural remains represented by a portion of mud brick structure were also revealed (Pushp Lata Singh 2005: 157). At Muni-Ki-Reti in Tehri-Garhwal district, gold coins of Kushana rulers Huviska and Vasaudev were found besides other artifacts (IAR 1975-6: 74).

A large number of copper coins of the Yaudheyas who ruled in the adjacent territory on the west covering the area of Himachal were found from different parts of Kumaon Garhwal region of Uttarakhand. A copper coin hoard is known from Jaunsar region and another hoard from Landsdowne (Garhwal). These throw light on the territorial expansion of the Yaudheya tribe towards the east by the third century A.D. (Khanduri 1994: 204).

Copper was used mostly as antimony rods, coins and unspecified objects. Bronze was used as vessels in Lachori in Chamba district. Iron was converted into implements and

tools in very few sites. These are Bharat Mandir, Ratura and Purola in Uttarakhand. Among precious metals, gold and silver were mostly been used as ornaments such as chains, earrings and pendants. Coins were found in both these materials. Crystal and carnelian are the only other semi-precious stones present in the form of beads.

Raw Materials Available Within The Sub-Region

Silver

Ancient silver mines have been noted at Uchich in Parvati Valley in Kulu district of Himachal. Lodes of argentiferous galena occur in the neighbourhood of Manikaran. The presence of silver in this region has also been reported by Calvert in his (1873) travelogue *Vazzeeri Rupi* in the Parvati Valley (G.S.I Misc Pub no. 15 1963: 258; West 1951: 163).

Iron

Iron is found in the Kangra district in Himachal along several points along Dhola Dhar in form of crystals of magnetic oxides of iron imbedded in decomposed mica schist. Iron mines are also worked at Kot khai in Simla. Several iron mines were said to be located in Jubbal, Bashahr, Mandi and the Sirmur region (I.G.I. Punjab 1908: 77)

Gold

Gold used to be washed in small quantities in the sands of Beas and Parbati (I.G.I. Punjab 1908: 365-66).

Copper

There are numerous copper deposits in the Kumaun Garhwal belt along the foothills of the Himalayan range in the Uttarakhand region. They are the following distrcts: -

Garhwal: Chamoli District: Mines existed in Pokhri in Talla Nagpur, which yielded annual revenue of half a lakh of rupees (Walton 1910: 8-9). Old mines were located in Pokhri. Besides mines also exist in Dhobri and Dhanpur, Agar and Sera located on either side of hills of Ranigarh which were extensively mined in the past.

Kumaun District: Rai mine in Gangoli pargana, according to Atkinson, was the most important in Kumaun in the nineteenth century (Ball, 1881:269).

Almora District: Old workings of copper have been noted in Thela, Almora where quartzite rejects were found lying around. Dandhakhan, Chamethi and Bafila in Almora where old workings and slag heaps are scattered around the villages (Biswas, 1996: 325).

Quartz Crystals

The *Gazetteer of Himachal Pradesh* (1963: 37) noted that the shepherds brought quartz crystals from the high ranges in the Chamba district.

Raw Materials Available Outside The Sub-Region

RAJASTHAN

Semi-Precious Stones

F.R. Mallet (1887: 72) reported pebbles of inferior carnelian in some streams of Rajputana near the Deccan Trap.

Epigraphic,Literary and Artefactual Linkages

Inscriptions of Indo-Greek rulers have been found in Begram near Kabul, Bajaur territory in NWFP, Mathura and Besnagar in Central India. They penetrated as far as Saketa, Madhyamika in Southern Rajasthan during the rule of Pushyamitra Sunga (Raychaudhuri 1996: 339, 340, 374). This is attested by Patanjali's *Mahabhasya* and the *Yuga Purana* which refer to Yavana raids in Mathura not directly but through Sabeta and Madhyamika in Southern Rajasthan (ed. Srinivasan 1989: 21; Bronkhost 2007 vol.19:359). It is most likely that coins of Indo-Greeks and several tribal republics found in parts of Rajasthan could have travelled via trade and the movement of people to Uttarakhand.

The region of Uttarakhand and Kumaon division along with Himachal region did not reveal many structural remains in comparison to the vast numismatic data. The region was however in continious occupation since the Mauryan period as evidenced by the find of coins of different dynasties ruling in different pockets of the hilly tract. The sector was most likely using resources such as copper, gold, iron, silver and crystals from within the sub-region. No manufacturing activity is reported. The only raw material procured from outside the sub-region was carnelian. This was most likely obtained from south-east Rajasthan.

Indo-Gangetic Divide and the Punjab Plains

Punjab plains form a significant part of the great plains of India. They comprise the states of Punjab, Haryana and Delhi. On the east, the Yamuna and Siwaliks border it. The plains of Rajasthan extend to its south. Delhi, lying east of the Yamuna is part of the Ganga-Yamuna Doab region (Singh 1971: 83-84). Historically, the region witnessed a well-established Mauryan empire that came to an end in the second century B.C. The post-Mauryan period witnessed the dominance of the Indo-Greeks and Kushanas who entered the subcontinent from the northwest and stationed themselves in Gandhara and the Punjab (Avari 2007:130). Silver coins of Indo Greeks are found at Agroha (Srivastava 1999:5). Coin moulds have been found at Ghuram (Menander) and Sanghol (Yaudheyas and Kuninda) in the Indo-Gangetic Plains and Punjab (IAR 1976-77:44; Handa 2010: 187; Magarbandhu 1985-6:78).

The noteworthy sites of this region are Sanghol (IAR 1962-63:17; 1970-71:31; 1985-86: 67; 1987-88:99), Agroha (Srivastava 1999:1), Rupar (IAR 1953-54: 7), Thanesar (IAR 1988-89:21-24), Naurangabad (Sengar 2004-05: 194-5) and Sugh (IAR 1998-99:23)

Sitewise Distribution Of Manufactured Objects

Chart 6a and 7a show the different raw materials used here. These are copper, bronze, iron, gold, silver, agate, carnelian, crystal, chalcedony, garnet, jasper, quartz, lapis lazuli, sandstone, and ivory.

*Evidence of Manufacture of Finished Products At Different Site*s

Gold: A large number of crucibles attested the existence of a metal working industry at Sugh in Ambala district (IAR 1965-66:36).

Iron: Ingots and slag of iron were collected from Sanghol in Ludhiana district (IAR 1970-71: 31). Sunga-Kushana deposits at Sanghol had some workshops represented by rows of hearths of various sizes and shapes (IAR 1985-86:67, Magarbandhu 1985-86: 77). Slag was found throughout the deposit at Bateshwara (upper Gangetic plains) in the uppermost level of late NBPW period indicating that the site was an important centre of iron smelting (Pushp Lata Singh 2005: 116).

Chart 6a

Indo-Gangetic Divide and the Punjab plains----- c. 200 B.C. to 300 A.D.

Raw Materials	*Agroha*	*Sugh*	*Daulatpur*	*Kurukshetra*	*Sanghol*	*Sugh Bhagwanpura*	*Purana Qila*	*Bhorgarh*
Copper/ Bronze	ear-ring	bottle stoppers, coins, antimony rods	coins, objects blade pieces	coins, rods,	antimonybronze bell rods, coins, perforated pot, beads, bangles		coins, crucibles	coins
Iron	arrowheads, rings clamps,	axes, nails	nail, ring, figure of bird	household objects	coins, knife, arrowheads, ladle, spoon	objects		implement
Gold					beads, coin, foil pieces			
Silver	coins							
Semi-Precious stone			Carnelian beads	unspecified beads	Agate beads Carnelian beads Chalcedony beads Garnet beads Jasper beads, Crystal beads Quartz beads			
Lapis Lazuli					beads			
Ordinary Stones		Marble toys	beads		stone arrowheads, Schist slate coin moulds, Spotted sandstone Buddha head			
Shell	bangle pieces	bangles	bangles	beads				
Faience				beads				
Ivory				combs, objects		handle	handle	

Chart 6a (continued)

Raw Materials	*Patiala*	*Mahendragarh/ Gurgaon*	*Rupar*	*Sunet*	*Khokhrakot*	*Thanesar*	*Brass*	*Naurangabad*
Copper/ Bronze	Brass coins	coins, objects	coins	coins razors, nails,	coins, rings, coins,	crucibles, coins, bangle pieces,	objects, antimony rods, rings	coins,rings
Iron		objects		knives spearheads	nails, rings knives	arrowheads fishhooks	objects, spear-heads	nails
Gold					ring, amulet			foil bead
Silver			utensils					
Semi-Precious stone					Quartz beads, Agate beads	Agate, Chalce-dony, Crystal, Jasper beads Quartz beads	Carne-lian, Agate beads	Carne-lian beads, Agate, quartz, Crystal beads
Lapis Lazuli							beads	
Ordinary Stone					unspecified grinding stones, weights			unspecified spindle whorls

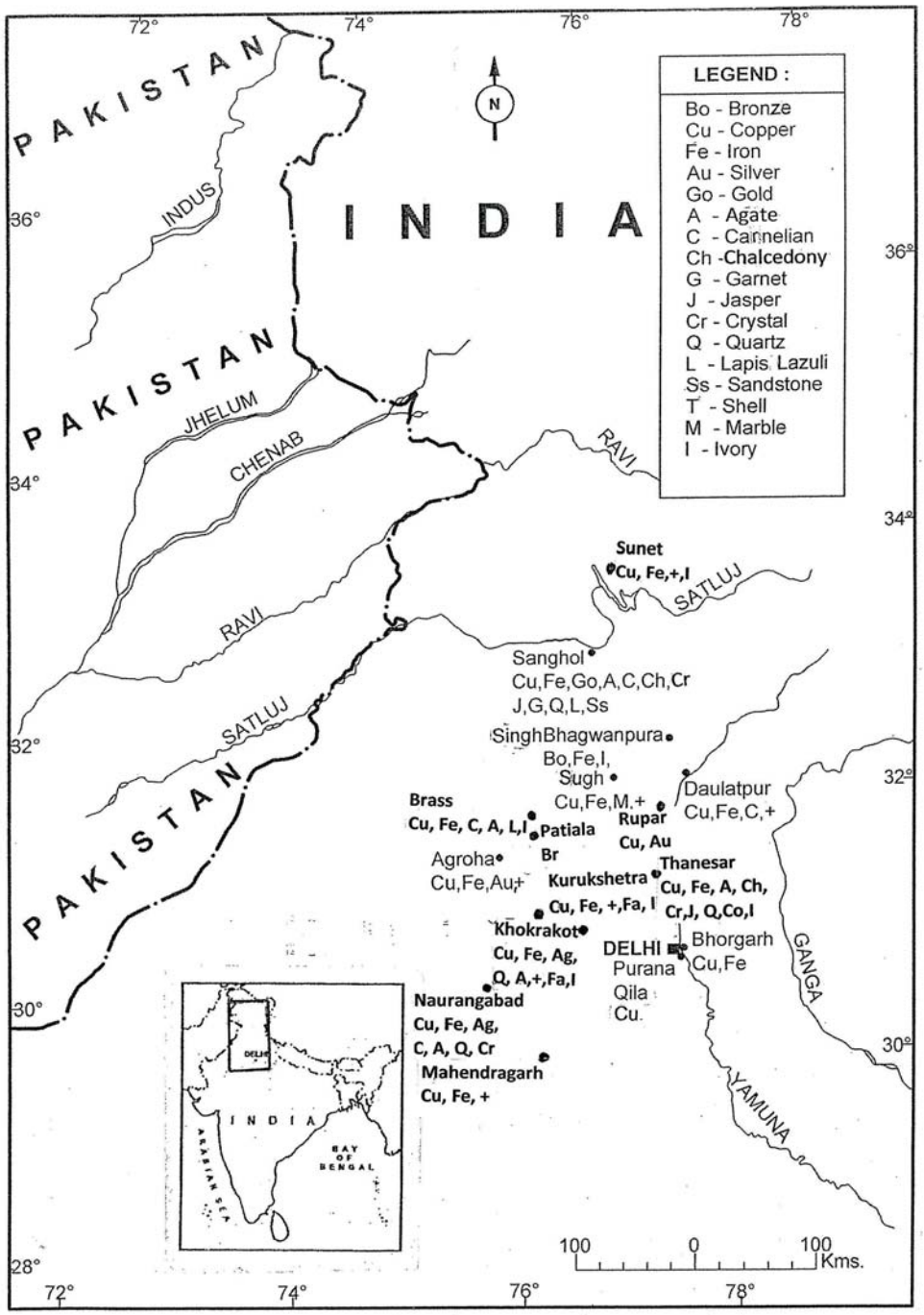
Chart 6a (continued)

Raw Materials	*Patiala*	*Mahendragarh/ Gurgaon*	*Rupar*	*Sunet*	*Khokhrakot*	*Thanesar*	*Brass*	*Naurangabad*
Shell/ Coral		bangle pieces		bangles, beads,	bangles, beads pendants	Coral beads, bangles		
Faience					bangles, beads			
Ivory				chessman, toy cart wheels	beads, objects	bangles, beads, dice, combs	dices	

MAP-6

SITE WISE DISTRIBUTION OF RAW MATERIALS IN THE

INDO-GANGETIC DIVIDE and PUNJAB PLAINS c. 200 B.C.-300 A.D



Shell: Finished and unfinished beads, bangles and pendants mostly made during the Kushana period, suggest a flourishing shell industry at Sanghol (IAR 1985-86: 69). Cut designs together with the columella and core of shell indicate that it was a thriving local industry (IAR 1987-88: 99).

Character of Sites and Distribution of Manufactured Objects

The region was marked by a variety of settlements. The typical urban sites are Sanghol, Agroha, Rupar, Thanesar and Sugh. All these sites have revealed prosperous phases. The ancient name of Agroha was Agrodaha and was mentioned by Ptolemy who called it 'Agara' (Srivastava 1999:1). Excavations unearthed burnt brick walls and floors and were of dwelling houses. Well laid out rooms, antiquities such as pottery, stone sculptures, terracotta objects, clay seals and die and pottery gave an idea of a well planned settlement of the Indo-Greek period (Srivastava 1999: 1-3). Sanghol, another urban-cum-religious site locally known as Uncha–Pind was a township of the Kushana period. Different structures as the citadel, containing a palace complex, fire alters, stupas and residential monasteries are found here. This is the site where 117 sculptures on railing pillars, cross-bars, and coping stones were discovered (ed. Ray 2010: 75). Evidence of craft activities such as iron smelting and bead making has been noted here (IAR 1962-63:17; 1970-71:31; 1985-86: 67; 1987-88:99). Rupar in the Ambala district has also revealed a number of coins, seals and terracottas from the Indo-Greek to the Gupta period (IAR 1953-54: 7).

The ancient mound at Bara near Rupar revealed some remains of the Kushana period at the uppermost level (Pushp Lata Singh 2005: 53). At Sugh burnt brick structures were noted either of a fortress or the enclosure of a monastery. Sunga-Kushana terracotta animal figures were found here (IAR 1963-64: 28). The earlier name of Sugh was Srughna. It ranked high in importance in the Mahabharata where it is mentioned along with Ahichchhatra and Hastinapur (IAR 1998-99:23). Large number of Kuninda coins has been found at Sugh (Agarwal and Kharakwal 1998: 153). Thanesar, another urban area, known as Harsh-ka-Tila was continiously inhabited from the Kushana period up to the Mughal times. The Kushana township is evident from the structural remains (IAR 1988-89:21-24). A multi coursed structure of baked bricks platform was found in the Kushana levels in excavations. Terracotta sealings with Brahmi inscriptions were also found (ed. Mani and Saran 2006: 33).

Purana Qila identified with *Indraprastha*, the Pandava capital in *Mahabharata* revealed structural remains and artifacts of Sunga-Kushana period (IAR 1970-71:10). The site came under the rule of the Yaudheyas in first century A.D. and Kushanas in the second-third centuries A.D. The excavations yielded dull red pottery with stamped designs and moulded terracotta figurines in Sunga style (ed. Singh 2007: 53). The Sunga period was marked by quartzite rubble structures; the Saka-Kushana period was distinguished by structural remains of baked bricks. A house revealed the remains of stairs and brick paved floor inside a house (ed. Singh 2007: 54, 57). Coins of Yaudheyas and Kushanas in copper were found in the excavations (ed. Singh 2007: 57).

The urban areas have yielded a variety of artifacts in different raw materials. Copper and iron have been used for the manufacture of tools, implements and weapons such as arrowheads, nails, sickle, blades, and clamps. Copper artifacts such as ear ring, bangles, pots, antimony rods have been found. Exploration in Patiala district yielded brass coins. Coins in this material are not very common. At Sanghol artifacts of gold or silver are noted. Gold and silver occur as coins and beads. Silver coins were found at Agroha. Naurangabad in Haryana was the seat of Yaudheyas. Plenty of their coins are found here. Structural remains speak of it as a fortified town of Kushana-Yaudheya period (Sengar 2004-05: 194-5). Cunningham has noted two hoards of Yaudheya coins from Sonepat between Delhi and Karnal and Delhi dating from the first century BC- third century A.D. (Cunningham 1896, reprint 1996: 76; ed. Singh 2007: 57).

The variety of semi-precious stones is evident at Sanghol and Sugh. The different raw materials were carnelian, agate, chalcedony, quartz, crystals, garnet and jasper. Sanghol was the only urban site in the area where lapis lazuli beads were found (IAR 1989-90:92). Some other raw materials used in urban sites such as Sanghol and Agroha are faience and shell used as beads. Ivory and bone combs, dice and bead, bangles at other urban sites as Kurukshetra, Sanghol, Sunet and Thaneshwar. Sanghol revealed substantial material wealth and a variety of resource-use.

The second tier of settlements is made up of small sites. These are Daulatpur, Singh Bhagwanpura, Sunet, Khokhrakot, Brass, Patiala, Mahendragarh and Gurgaon (IAR 1968-69: 9; 1980-81: 51; 1983-84: 67; 1986-87: 35; 1993-94: 91; 1978-79: 91, 95). Daulatpur yielded red polished ware, Indo-Greek and Kushana coins were found at

Singh Bhagwanpura. Coins and coin-moulds of Indo-Greeks and Kushanas are reported from Hissar district in Haryana (IAR 1963-4: 90). Gold coins of Kushana rulers have been found at Machhrula in Sheikhpura district in Punjab (Srivastava 1930-34:309). Bhorgarh near Delhi revealed structures of mud bricks and floors along with coins of Kushanas of the second to the third century A.D. (Babu 1994-5: 88-9). Asandh situated south-west of Karnal has yielded remains of a Kushana period stupa alongwith coins of Kushanas and Yaudheyas (Kesarwani and Vashist 2001-02: 90). Naurangabad in Bhiwani district in Haryana was an early historical city under the Yaudheyas and Kushanas. It was a fortified town of the first century A.D. Excavations revealed a house plan made of mud bricks and reused burnt bricks. Rare Kushanaa coins of Kanishka III, Vasudeva II were found along with coinhoards of Yaudheyas bearing legends 'Yaudheyanam' (IAR 2001-02: 66). Dhalewan in district Mansa in Punjab is another site reoccupied during the Kushana period. The remains exposed showed mud-bricks structures, burnt brick bats, walls and kilns. Terracotta human and animal figures and copper coins were found (IAR 2001-02: 205). Period III at Autha in Gurgaon district has reported a Kushana settlement but no structural remains are reported from here (Pushp Lata Singh 2005: 53).

The pattern of resource-use remains the same as the urban sites. A few artifacts are found from sites as Daulatpur, Khokhrakot in Karnal and Rohtak districts in Haryana. Lapis lazuli bead were noted at Brass in Patiala district. Semi-precious stones such as quartz, agate, and carnelian were used as beads at these two sites and Naurangabad. Gold was used for jewellery as the ring and amulet at Khokhrakot reveal.

Raw Materials Available Within The Sub-Region

Gold

Gold washing is carried on at various in the upper reaches of most of the rivers (I.G.I Punjab 1908: 77). Practice of gold washing in Punjab is of considerable antiquity. It used to be washed in Ambala and Patiala districts (Ball 1881: 212).

Tin

The resource is available in the Bhiwani district in Haryana. The area of metasediments including quartzites micaceons quartzites, mica schist and siltstone occur at Tosham, Khanak and Rewari as isolated hillocks separated by thick alluvium (Babu 1994: 42).

Rock Crystal

Crystals is available in the Kalabagh region on the Indus River in Punjab (Brown 1936: 300).

Ivory

Elephants were found in the forest regions at the foothills of the Himalayas in the Terai region of Uttar Pradesh (Sukumar 1993: 16).

Raw Materials Available Outside The Sub-Region

The presence of copper, garnet and faience (Rajasthan), silver (Uttarakhand) and semi-precious stones have already been noted (p. 29, 30 and 49).

RAJASTHAN

Iron

There are many old working sites near Lauhariya, Ora and Vasi villages in Banswara district in southern Rajasthan (Sehgal 1974:6).In the ferruginous quartzite band of Pur Banera belt of ridges in Rialo series, ancient iron workings are found near Bigod, Banera and Dariba in the Bhilwara district (Sehgal 1975: 10-11). Lahiri (1992:287) has noted occurrence of iron at Alwar, Udaipur, Jaipur and Bhilwara district.

Sandstone

Sandstones and Limestones are the most important minerals in the geological formations of the Aravallis in the district of Jodhpur (Agarwal 1979: 6).

SINDH

Shell

Marine shells were available in the Sindh coast.

Epigraphic, Numisamatic and Literary Linkages

In parts of Eastern Punjab and adjacent hilly tracts, indigenous tribal republics such as Audumbaras, Trigartas, Kunindas, Yaudheyas and Arjunayanas had become powerful in the wake of the fall of the Indo-Greek rule (Raychaudhuri 1996: 387). Coin hoards of Yaudheya tribal republic are known from Jaunsar region and Landsdowne (Garhwal) which reflect on the expansion of this republic to the hill region (Khanduri

1994: 204). Majumdar and Altekar (1986:29), on the basis of numismatic evidence of Yaudheya coins, have put forward the view that the decline of the Kushana power to the east of the Sutlej and the hilly tracts of Uttarakhand came about only in the third century A.D. The different tribal republics were responsible to a great extent for this decline and were able to declare their independence only after overthrowing the Kushanas. It possibly indicates that the Himachal and Uttarakhand region was also part of the Kushana dominions. Cunningham found the coins of the Indo-Greeks, Parthians and Kushana kings at Pathankot along with coins of tribes such as the Audumbara. It is therefore most likely that Kushanas ruled in parts of the Himachal and the Uttarakhand territory (Charak 1978: 79, 82).

The affinity of the Indo-Gangetic region with Rajasthan can be understood by the numismatic evidence of these dynasties in Rajasthan-Gujarat region. Copper coins of Mathura Saka-Kshatrapa Hagamasha have been noted from Mathura as well as Noh and Bharatpur in Rajasthan (Hooja 2006: 105; Cunningham1891, reprint 1996: 87). K.D. Bajpai (2004: 104) assigned a date of first century A.D. to this ruler. An inscription of Yaudheyas from northern parts of Rajasthan is known from Bijaygarh near Bayana, Bharatpur (Hooja 2006: 133; Saklani 1998:115). Kushana cultural material and coins of Kanishka III are found from across Bikaner forming the central part of the Rang Mahal area and sculptures of this period from Ajmer and Bharatpur (Rydh 1959: 43; IAR 1961-62:38). Coins of Kadphises are found from Suratgarh and Hanumangarh in north Rajasthan (Hooja 2006: 103). The Western Kshatrapas, a branch of the Indo-Scythian (Saka) rulers of Northwest were made in charge of the south-western *satrapy* of Kanishka's Empire (Hira Lal 1985: 38). The author of the *Periplus* confirms that the Western Kshatrapas were the feudatory of the Kushanas (Schoff 1995: 167). Ptolemy mentions three provinces under the Sakas. These were Patalene (Indus delta), Abiria (East of the Indus) and Syrastrene (Saurashtra) (McCrindle 2000 reprint: 369). The reach of the Kushanas upto Saurashtra and Kutch was thus not unlikely.

Our survey of the Indo-Gangetic divide and the Punjab plains show that though the region did not posses any substantial resource of its own, nevertheless evidence of manufacture is noted at Sugh and Sanghol in gold, iron and a local shell industry. A few resources available within the region were used. These were gold, tin, rock crystal

and ivory. For resources such as iron and garnet, the Indo-Gangetic divide and the Punjab plains was dependent on neighbouring province of Rajasthan. Shell and semi-precious stones such as agate, chalcedony, jasper and carnelian were procured from Gujarat. Rajasthan was possibly accessed for iron, quartz, sandstone and Uttarakhand for silver. Lapis lazuli was most likely obtained from Afghanistan as the region was very much a part of the Indo-Greek as well as Kushana Empire.

In all, the Doab and the Punjab Plains was interacting with several neighbouring regions for the procurement of resources. The evidence of a local industry in shell at Sanghol (which was itself a non-local raw material) reflects upon the vast network of resource procurement in the region in this phase.

Upper Gangetic Plains

The Ganga River dominates the great northern plain of India. It flows over an extensive area and in fact, its course extends into Bangladesh. The upper Gangetic area, falls largely within the state of Uttar Pradesh and lies approximately between the Yamuna in the west and extends to a hundred-metre in the east. Geographically, the Upper Gangetic Plain has been regionally divided into the north and the south. The northern part of this division comprises of the Rohilkhand plain in the north and the Awadh plain towards the east. The Upper Ganga-Yamuna *doab* in the north, the trans-Yamuna plain towards the south, and the lower doab in the easterly direction form the southern part (Singh 1971:177-9).

Historically, the upper Gangetic plains are very significant. Sections of it appear in the geographical descriptions of the epics, the *Ramayana* and the *Mahabharata*. The region is known as the *Aryavarta* and is abundant with archaeological evidence of its history in the form of Ashokan edicts and coin hoards of various dynasties. Some of the important historical sites are Hastinapur (Dist. Meerut) (Lal 1954-55), Mathura of the same district (Srinivasan 1989), the ancient city of Sravasti and Sahet-Maheth in Dist. Baharaich (Sinha 1959; Marshal 1910-11). These sites form part of the upper Gangetic plain and are also some of the well-excavated sites of this region. Besides this, Atranjikhera (Dist. Etah) (Gaur 1961-62; Gaur 1983), Ahichchhatra (Dist. Bareilly) (Dikshit 1952), Hulas (Dist. Saharanpur) (I.A.R 1980-81:76) and Sonkh (Dist. Mathura) (Hartel 1993) are also well excavated although not all of them are

Chart 7a

Upper Gangetic Plains—c.200 B.C.---300 A.D.

Raw Materials	*Hastinapur*	*Saheth-Maheth*	*Sravasti*	*Sonkh*	*Atranjikhera*	*Ahichchhatra*	*Mathura*
Copper/ Bronze Brass	rings, coins, antimony rod, Bronze miniature bell,stopper, bangles,beads	coins,bangle, antimony rod, rings,sprinkler	coins,broach	Bronze wheel ring, hooks,pan,toggle, ring,ear stud, antimony rod, disc,wheel with spokes,beads,coins, nails,goblet with disc,bowls,pin,bronze figurines,bell,irregular sheet, fragment of cart, lid, Bronze toe ring,Bbrass bangle fragment, bracelet	ring, bracelet, coins, antimony rod	beads,coins,pins, awls,coils,rings, pendants, antimony rods	coin hoard, nails,pins, borers, beads, antimony rods
Lead				disc			
Iron	nails,chisel, slag,pieces, bar,adze, nails, miniature bell,base of pan,axe,sickle, bell,pan with handles	razor,spearhead, arrowhead,chisel, knives,slag, blade	nail,socket, arrowhead, slags	arrowhead,lancelot, spearhead, blade, sickle, fragment of knife, strap, clamp, hooks, tube,ladle,bell, ear pendant, foot ring ,rod, coil,buckle,nail, ring, bracelet, dagger, hook-belt, chain	arrowheads	fragmented objects	arrowheads, knives, nails, clamp, spearhead
Gold	coins, rings	beads		foils, pendants, beads			coin hoard
Silver	coins						
Semi-Precious stone	Carnelian, Jasper beads, Chalcedony lid,bead,Onyx, Amethyst bead, Agate bangle, Crystalline Quartz pendant	Carnelian beads	Amethyst beads, Agate disc Carnelian dagger,pendant,Crystal dagger pendant	Agate,Carnelian beads,Amethyst, Quartz beads, Chalcedony, beads,Rock-Crystal beads,Jasper beads	Agate,Onyx beads,Jasper beads,Chalcedony beads	Agate,Carnelian beads,Crystal, Chalcedony beads	Crystal, Agate, Carnelian Chalcedony Jasper beads

Chart 7a (continued)

Raw Materials	*Hastinapur*	*Saheth-Maheth*	*Sravasti*	*Sonkh*	*Atranjikhera*	*Ahichchhatra*	*Mathura*
Lapis Lazuli				beads			beads
Ordinary Stone	Chert beads, Sandstone rotary quern, quern,pestle, Fragmented Marble bangle	Sandstone sculpture, quern,stone pestle, beads,Sandstone figure	Limestone beads	Sandstone plaques, sculptures,railing, fragmented figure, ringstone,disc,pestle, Sandstone capital Slate tray ,lid of casket, knob,Schist lid	Sandstone pestle, Chert beads whetstone		caskets, pestle, image, beads
Steatite/Soapstone	Steatite lid		Soapstone mould	bowl ,lid of casket, bowl, Slate casket, lids	fragment of casket		Soapstone toilet objects
Shell	bangles		dagger pendant	beads,fragment of bangle,hairpin,bowl	bangles,beads		beads
Faience	beads			beads			beads
Ivory	mirror handle beads,comb,	combs					stand

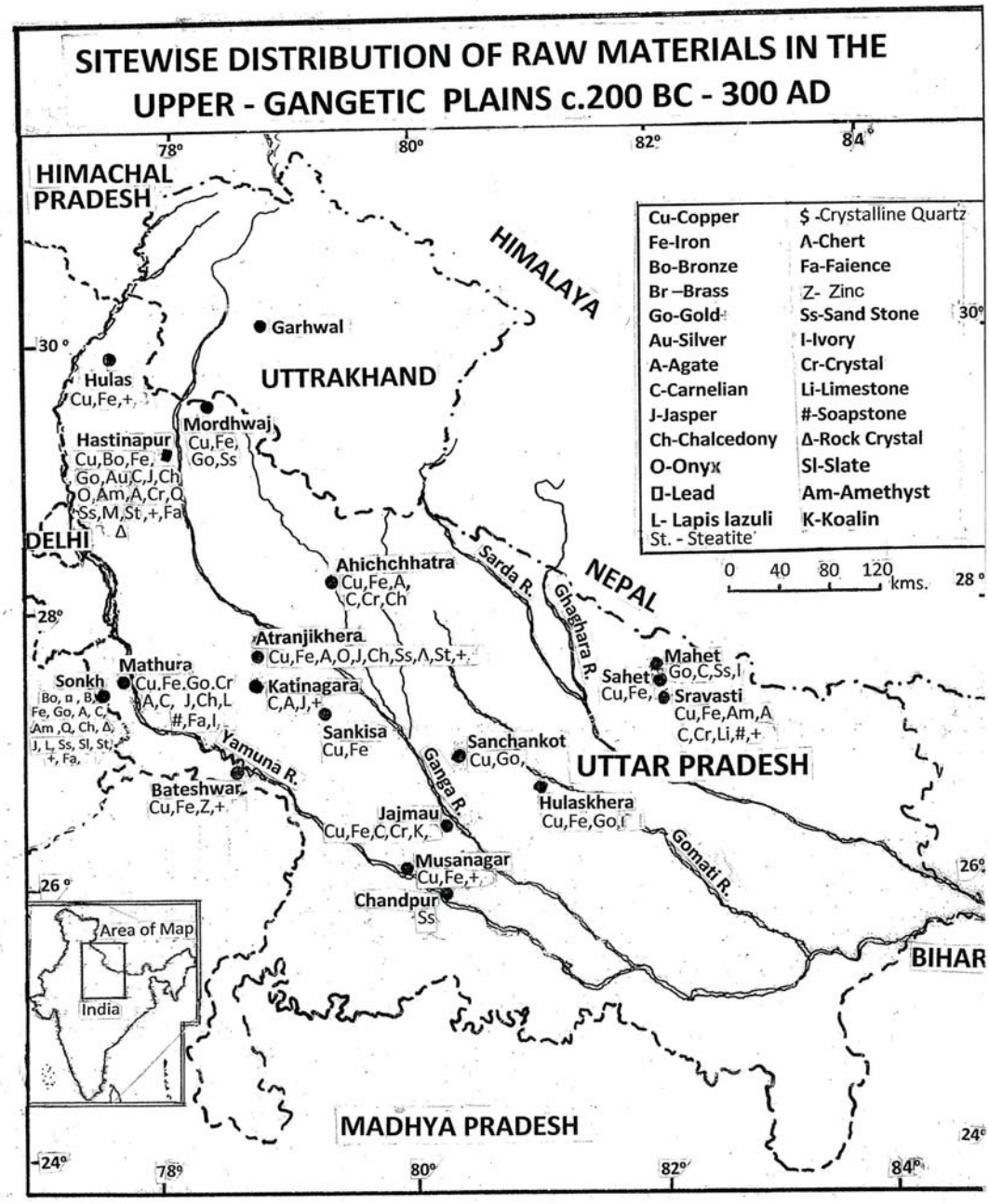
Chart 7a (continued)

Raw Materials	*Manwandih*	*Chandpur*	*Kurali*	*Musanagar*	*Hulas*	*Bateshwara*	*Jajmau*	*Hulaskhera*	*Sankisa*
Copper/Bronze	coins			antimony rods	coins,bowl	antimony stick,rod	antimony rods,coins	coins,seal, antimony rods	coins,beads
Iron	arowheads, spearheads, nails,rings			implements	objects	fragmentary objects	arrowheads	axe,bolts, spearheads	objects
Zinc						scrolled ear stud			
Gold								coated beads	
Silver	coins,hairpin		coins						
Semi-Precious stone	Agate,quartz beads				beads		Carnelian beads,Crystal pendants	beads	
Ordinary Stone		Sandstone figure				unspecified, beads , casket s	unspecified casket lids		
Kaolin							bowls		
Shell					bangles	bangles			
Ivory								bracelet	

Chart 7a (continued)

Raw materials	*Katinagara*
Semi Precious stones	Carnelian , Agate beads, Jasper beads
Shell	ear-ring, beads

MAP-7


SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE
UPPER - GANGETIC PLAINS c.200 BC - 300 AD
78°
80°
82°
84°
HIMACHAL PRADESH
HIMALAYA
Garhwal
30°
Hulas
Cu,Fe,+,
UTTRAKHAND
Mordhwaj
Cu,Fe,
Go,Ss
Hastinapur
Cu,Bo,Fe,
Go,Au,C,J,Ch
O,Am,A,Cr,Q
Ss,M,St,+,Fa
Δ
DELHI
Ahichchhatra
Cu,Fe,A,
C,Cr,Ch
Sarda R.
Ghaghara R.
NEPAL
28°
Atranjikhera
Cu,Fe,A,O,J,Ch,Ss,Λ,St,+,
Mathura
Cu.Fe.Go.Cr
A,C, J,Ch,L
#,Fa,I,
Sonkh
Bo, ¤ , B,
Fe, Go, A, C,
Am ,Q, Ch, Δ,
J, L, Ss, Sl, St,
+, Fa,
Katinagara
C,A,J,+
Sankisa
Cu,Fe
Yamuna R.
Ganga R.
Sanchankot
Cu,Go,
Mahet
Go,C,Ss,I
Sahet
Cu,Fe,
Sravasti
Cu,Fe,Am,A
C,Cr,Li,#,+
UTTAR PRADESH
Bateshwar
Cu,Fe,Z,+
Hulaskhera
Cu,Fe,Go,I
Jajmau
Cu,Fe,C,Cr,K,
Gomati R.
Musanagar
Cu,Fe,+
Chandpur
Ss
26°
Area of Map
India
BIHAR
MADHYA PRADESH
24°
Cu-Copper
Fe-Iron
Bo-Bronze
Br –Brass
Go-Gold
Au-Silver
A-Agate
C-Carnelian
J-Jasper
Ch-Chalcedony
O-Onyx
□-Lead
L- Lapis lazuli
St. - Steatite
$ -Crystalline Quartz
Λ-Chert
Fa-Faience
Z- Zinc
Ss-Sand Stone
I-Ivory
Cr-Crystal
Li-Limestone
#-Soapstone
Δ-Rock Crystal
Sl-Slate
Am-Amethyst
K-Koalin
0 40 80 120 kms.

well published. The sites vary in their importance in relation to the finds from different chronological layers. The period of study in the concerned work is fairly well represented in all the important sites of the region with substantial cultural material.

The Sitewise Distribution Of Raw Materials

A range of raw materials were used during this period. As per Chart 7a copper, iron, gold, zinc, brass, silver, agate, carnelian, crystal, jasper, chalcedony, onyx, quartz, amethyst, rock crystal, lapis lazuli, chert, marble, limestone, slate, sandstone, soapstone, steatite, shell, faience, and ivory objects were found at the site here.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Fragmentary lumps and slag of iron are distributed in all the levels at Sravasti in the early Christian era levels containing Kushana period artifacts (Sinha: 1959:67). Though no working tools have been found at Hastinapur, slag lumps are found in the top layers of the Kushana period level. Out of 126 objects of iron, about 90 are shapeless bits and slag pieces (Lal: 1954-55:97). At Kalli Pachchhim, burnt nodules, iron slag and an overground circular furnace was found from the Kushana period layers. There are two platforms on the sides for the workmen to sit. The entire construction appears to be a workshop (Tewari 1999: 13, 23).

Coin: Coin moulds of fine and hard gray terracotta have been found from early Kushana levels at Sonkh. The outer face shows concentric grooves while the inner face preserves two complete and a half of two more coin sockets of rectangular and rounded shape. From a hole in the center, these are grooved short channels for leading the metal into the sockets (Hartel: 1993:316).

Bead: An unfinished specimen of an unbored agate bead is found from the Kushana level at Atranjikhera (Gaur: 1962-63:30).

Character of Sites and Distribution of Manufactured Objects

The survey of the upper Gangetic plains has revealed a variety of sites with different characteristics. The typical urban sites are Sonkh, Mathura, Atranjikhera, Ahihchhatra, Hastinapur and Sankisa (Hartel 1993; ed. Srinivasan 1989; Gaur 1961-

62; Gaur 1983; Dikshit 1952). In literature, most of the sites are described as centres of political and economic activity. Ahichchhatra is known as one of the capitals of the kingdom of north *Panchala*, while Sankisa is unanimously identified with Sankasya, capital of Kushadhwaja, the brother of Janaka of the epic *Ramayana*. Likewise, Hastinapur is associated with the epic *Mahabharata* as the seat of the Kauravas. Archaeologically, Sankisa and Ahichchhatra have been described by at least one archaeologist as among the four biggest mounds in the state of Uttar Pradesh (Gaur 1983: 1). Sonkh near Mathura was an urban-cum-religious site of the Kushana period. The excavation revealed several layers of structures densely built up complexes both secular and non-secular. An apsidal temple and other structural remains of some blocks have also been exposed (Hartel 1993:60). Mathura, the seat of Kushana power exposed in excavations a mud fortification (*prakara*) around the mound. Structural remains were mostly built of mud and baked bricks. The mud fortification was possibly enlarged during the Kushana period. An inner fortification with semi-circular bastions of quadrilateral shape was built around the centre of the city and a moat was built of mud. Construction of houses was seen on a raised platform. The floor was made of compact mud, lime nodule and bricks (ed. Srinivasan 1989: 169). The region of Mathura, as the seat of Kushana power was marked by an impressive dynastic monument, the most important being the Kushana sanctuary at Mat located within the region. It contained the royal images of Kushana rulers (Vima Kadphises, Kanishka and Huviska) known as the *devakula*. The installation of massive royal portraits in the devakula indicates the new type of symbolism under the Kushana rulers. According to B.D. Chattopadhyaya (ed. Srinivasan 1989: 22-3, 168), all this seems to suggest that Kushana presence in Mathura was direct. Cunningham further noted coins of Indo-Greek rulers such as Menander, Apollodotus and Antimachus II, Kushana and Indo-Scythians at Mathura (Cunningham 1891 reprint 1996: 85). From the Kushana period layers (Period IV) at Mathura, pottery- mostly sprinklers, vases, storage jars, basin, lids, spouted jars was recovered. Terracotta gamesmen in the form of tiny animal forms, Kushana seals and sealings, terracotta human and animal figurines with distinct foreign influence were found. Sculptures in red sandstone showed an imprint of Gandhara art (ed. Srinivasan 1989: 169). Hastinapur yielded dwelling units of burnt bricks with a

continued use of ring wells from the Mauryan period. Terracotta human and animal figurines were also found in the excavations (Lal 1954-55: 5-151). At Ahichchhatra, the excavations revealed a continuous habitation from earliest times to c. 1100 A.D. Cunningham identified a few sites including stupas inside and outside the fortified area (Ghosh 1946: 37-40). .

The urban areas have yielded a variety of objects in different raw materials. Some resources as copper and iron were used mostly in the manufacture of tools, implements and weapons such as arrowheads, knives, spearhead, nails and pins. Copper was also used in the manufacture of coins, beads, pendants and rings. These show a wide distribution in the archaeological network of the Kushana period in this area. The use of bronze and brass can also be found at the urban site of Sonkh. At the same time what is equally striking is the very limited, concentrated distribution of certain resources. For instance, lapis lazuli is not readily available in the Gangetic plains. Beads of lapis have only been found in the Yamuna plains of Mathura and Sonkh in the whole upper Gangetic plains. Its use can hence be seen in one regional pocket of the upper Gangetic plains.Some other raw materials specially used only in urban areas are faience and quartz in Mathura, Sonkh and Hastinapur. Onyx was also used at Hastinapur and Atranjikhera. The interesting aspect here is that most of these are relatively common in the hilly areas that fringe the zone (Aravalli for instance) but their usage is limited to specific pockets only. The diversity of resource usage stands common to all the urban sites.

The small urban sites in the region are Jajmau (IAR 1974-75: 48), Bateswara, Hulaskhera (IAR 1980-81:71), Manwandih (Hem Raj 1994-95: 41), Kalli Pachchhim (Tewari 1999), Chandpur and Kurali, Sanchankot and Newal in Unnao district (Shukla 1992-93: 191).

In the majority of these sites were exposed house complexes of baked bricks. In Jajmau in Kanpur district, from the Kushana level, houses made of baked bricks have been exposed. Also, a street with row of houses on both sides has been have been found (1974-75: 48). Hulaskhera revealed a unique road dated to the Kushana period along with other brick structures (IAR 1980-81:71). Kalli Pachchhim, a site near Lucknow has substantial structural activity in Period II assigned to Kushana period. A rammed mud floor trench was found and manufacturing acivity in the form of furnace

was noticed. Ring wells at the end of habitational deposit were found in this period. Red ware, terracotta objects like figurines, pottery such as sprinkler, lids, inkpot and Kushana coins were found from this level (Tewari 1999: 17, 23, 136). Other sites revealed through exploration at the site of Narhan are Chando, Chaura Kalan, Dauraha, Mundiari, and Pachra. These revealed Kushana-Gupta period bricks, burnt brick structures, red ware pottery and terracotta animal and human figurines (Singh 1991-92: 37-38). Coins of Indo-Bactrian kings were recovered from Balaikot (Chakrabarti 2007: 99). Katinagara in Etah district revealed a Kushana Gupta period layer dated c. 200-600 A.D. Pottery such as sprinklers, vases, storage jars and moulded bricks, terracotta ear studs were recovered (IAR 2001-02: 241).

The resource-use in these small sites is similar to the urban centers. The use of certain raw material at these sites is noteworthy. Bateshwara near Agra is one site that has revealed a zinc ear stud. This material has not been used at any other site in the upper Gangetic plains. Jajmau has yielded kaolin bowls (IAR 1974-75: 48). As regards the use of precious metals, gold coins have been recovered from some sites such as Hulaskhera. Silver coins and hairpins have been found from Manwandih and Kurali. Katinagara in Etah district yielded beads in semi-precious stone as carnelian, agate and jasper. These also occur at Jajmau and Manwandih.

Sravasti and Saheth-Maheth in Baharaich district contain religious structures related to Buddhism. Sravasti is an urban-cum-religious site. It was an important centre of the Buddhists ranking next to Bodh Gaya. The site is surrounded by an earthen rampart. The structural remains were mostly in burnt bricks (Takahashi, Yamaoka, Yoneda and Uesugi 1999-2000: 74-6). Saheth has often been identified with the Jetavana monastery known for its association with the Buddha and is adjacent to the city of Sravasti. The site is located in the heartland of ancient Kosala that together with Magadha and Kasi formed the focal region of northern India in antiquity. The find of Indo-Scythian coins, Kushana coins and seals and sealings as well as pottery and terracotta indicated the presence of post-Mauryan dynastic levels fairly well here (Marshall 1910-11: 1-24).

Orai in the Saryupar plains was a monastic establishment of the Kushana-Gupta period. Red ware was found here (Tewari and Mani 1995-96: 156). Kushana period assemblage was recovered from here which included terracotta figurines, broken

soapstone casket, and iron ring and copper fish hook (Mani 1997-98: 135). Bhuteshwar in the vicinity of Agra reported considerable stupa railings and pillars with Yakshinis. The inscriptions at the site mention reigns of Kushana kings Kanishka, Huviska, Vasudev and Mahakshtrapa Sadasa and Rajuvala (Chakrabarti 2007: 93). Musanagar (Tewari and Srivastava 1995-96: 72) was a city-state of significance in the Kanpur district. The stupa remains in its vicinity were found at Katar and Umargarh/Chandanpur to south of Musanagar. The stupa remains here were contemporary with the Bharhut stupa of second century BC. A Sunga period pillar fragment of red sandstone was noted at the site. Other such fragments were also discovered along with a large number of typical Sunga terracottas. A terracotta seal inscribed with the Buddhist creed was also reported. The site had a continuous occupation up to the thirteenth century. The bulk of the occupational deposit belonged to the period sixth-seventh centuries BC to 300 A.D. The structures were of burnt bricks with lime plastered floors (Chakrabarti 2005: 90-2).

Artifacts, mostly in the form of coins, tools, weapons, beads and ornaments, sandstone sculptures and caskets; beads in semi-precious stones along with shell objects have been recovered from these sites.

Raw Materials Available Within The Sub-Region

Agate

F.R. Mallet (1887: 71) in Part IV Manual of Geology of India quoted J.Hardie who in 1883 had noted agates near Agra:

" Near the city of Biana which lies about 50 miles west, south- west from Agra, there occurs a series of alterations of a ferruginous quartz rock with a peculiar conglomerate containing imbedded agate, agate- jaspers and similar minerals. The cementing medium is extremely hard and compact and is itself of the nature of agate."

Ivory

Since the large part of the Upper Gangetic Plain including the Ganga-Yamuna Doab was under forest cover, it may be assumed that elephants formed a major portion of the fauna. Also, herds of these elephants often moved into Nepal (Sukumar 1993: 16).

Gold

This occurs in the Gangetic plains in the form of alluvial gold in the sands and gravels of a large number of rivers throughout India.

Sandstone

Occurrence of sandstone quaries are located in Upper Bhanners to south of Bharatpur at Fatehpur Sikri and Rupas (Ball 1881: 545).

Raw Materials Available Outside The Sub-Region

The presence of amethyst (Punjab), marble (Rajasthan), lapis lazuli (Afghanistan) has already been noted. (p.29, 30 and 31).

UTTARAKHAND

Soapstone

This occurs in Khal, Chamoli district in Uttarakhand (Lahiri 1992:301) and also Garhwal region (Ball 1881:415).

Crystal

Lahiri (1992:302) takes note of the presence of nodules of quartz in the southern and middle regions of old Kumaon provinces.

Limestone

Limestone is found at Lachamanjhula region in Garhwal, Uttarakhand (Mishra 1989:8), Chunakhan in Kota, Bhabar region, Nainital in Uttarakhand (Nevill 1904:15).

Iron

Kumaon District: Mines existed at Ramgarh, Khairna, Kaladhungi and Dechauri. Iron deposits were also mentioned in literary works, which described the process of manufacture of iron ore in Kumaon (Ball 1881:408-9)

HIMACHAL

Crystal

Walton (1910: 8) has noted the presence of quartz schist in the outer Himalayan zone in Chamba district, (IGI Punjab 1908:37).

Slate

Slate is available in southern slopes of Kangra district, Himachal (Walton 1910:8-10).

RAJASTHAN

The presence of copper, iron has been previously noted on p. 30 and 55.

Limestone

Limestones are the most important minerals in the geological formations of the Aravallis in the district of Jodhpur (Agarwal 1979: 6).

Zinc

Zinc is available in Udaipur, Sorjat in Jodhpur districts. Remains of zinc furnaces are there at Sorjat (Erskine 1908:52).

GUJARAT

Shell

The Gujarat coastline seems to be the nearest source for shell.

AFGHANISTAN

Silver

The occurence of silver has been noted on p.31.

Epigraphic, Numismatic and Literary Linkages

In the first century A.D. the Kushana empire under Kanishka was spread over a vast area. It consisted of Kapisa-Gandhara region in the northwest, Kashmir to Benaras including the western and central Himalayas, Mathura, Sravasti, Sarnath and Benaras (Raychaudhuri 1996: 418). In this light, resource procurement from far away Afghanistan is certainly not unlikely. Indo-Greek and Kushana presence in the region of Rajasthan-Gujarat has been noted on p.33-4.

The intimate connection between trade and the propagation of Buddhism is evident from donations at Buddhist centres such as Bharhut located in central India and Kanheri in Maharashtra by traders from various places. It is also evident from the tales of *Jatakas* depicting the *Bodhisattatva* as a 'saviour' of maritime activities. Such medallions are found at Mathura, Bharhut and other centres attached to Buddhism (Ray 2002: 86). As

such the Mathura railing pillar inscription of Dhanabhuti is an interesting piece of evidence regarding the connection between Mathura and Bharhut in the late centuries BC. It is a donation of a railing with gateways for honouring all the Buddhas by a certain Dhanabhuti (possibly ruling during the Sunga period) and is a substantial evidence to indicate that Buddhist monuments were constructed in Mathura at approximately the same time as at Bharhut (Quintanilla 2007: 10). That there was substantial mobility between important urban centre in Upper Gangetic Plains and central India and perhaps further to the west coast for trade is perhaps evident from the above reference.

The Upper Gangetic Plains witnessed a well-settled occupation during the period. The urban areas yielded plentiful artifacts of different raw materials. Manufacturing activity was also noted at the urban sites and small sites. These were Hastinapur, Atranjikhera and Sravasti and Kali Pachhim. The sector was mostly dependent on the adjoining regions for procurement of basic raw materials. The nearby regions especially the Kumaon-Garhwal belt in Uttarakhand probably were the main source of copper and iron, soapstone, slate and limestone. Rajasthan was the nearest source for zinc, marble, and semi-precious stones such as carnelian and onyx available in the adjoining territories near the Deccan trap cavities. Shell artifacts mostly bangles and beads were found from quite a few urban sites such as Atranjikhera, Mathura, Hastinapur and Sravasti. A few small sites too yielded shell artifacts. Considering the yield of shell artifacts from sites in the Upper Gangetic Plain region it seems possible that finished products of shell was most likely obtained from the Gujarat coastline.

Middle Gangetic Plains

The middle Gangetic plains cover part of eastern Uttar Pradesh and Bihar plains in its entirety lying on either side of the Ganga and the Saryu. It falls within the Himalayan and the Peninsular ramparts in the north and south respectively. The western and eastern limits of the region are wide open forming the central part of the Ganga plain in continuation from the upper Gangetic plains that ultimately dies down into the lower Ganga plain. The region is divided in the north and the south. The Ganga-Ghaghara *doab* and Saryupar plain in the west and the Mithila plain as also the Kosi plain in the east fall in the northern part. The southern part covers the Ganga-Son divide in the south and the Magadha and the Anga Plain towards the east (Singh, 1971:246).

Chart 8a

Middle Gangetic Plains—c.200 B.C.---300 A.D.

Raw Materials	*Bhita*	*Kumrahar*	*Pataliputra*	*Vaisali*	*Rajghat*	*Kausambi*	*Narhan*	*Prahladpur*	*Bakraur*
Copper/Bronze	coins, Bronze bell, bowls	bead,anti-mony rods, amulets,coins, Bronze ear ring, coils,bracelet, ear-pendant	antimony rods,pick axe,minia-ture bell,spoon	antimony rods,hooks, nails,rings, bowls,coins, daggers,bang-les,ear-pen-dant, finger ring,bell, Nupur	coins,anti-mony rods	coins,nose ring,bangles, beads,finger rings	antimony rod, piece,rings, fish hooks		
Iron	bell, hatchet	nails,blade, latch,chisel, dagger,socket axe	nails,knife, daggers, blade,spear-head,arrow-heads,pans, sickles,axes	lance-head, knife,blade, arrowhead, spearheads, daggers, implements, rings, nail	objects	arrowheads, dagger,drill, ploughshare, sickle,ring, spearhead, clamp,chisel, ladle,chain	arrowheads, spearhead, chisel, nails	borer	
Gold	finger ring, bead	talisman, amulet		ear ornament, rings,balls, humped bull, hair clips, necklace, ring amulet		bead			ear ornament
Silver				objects					
Semi-Precious stone	Agate,Amethyst beads,Carnelian beads,Jasper, Opal,Quartz Crystal beads, Chalcedony beads,Quartz pendant		Carnelian, Agate beads, Crystal beads	Crystal beads, Jasper weights, disc,Amethyst beads,Chalce-dony Agate beads,Opal, Carnelian beads Quartz,	Agate, Carnelian beads,Crystal bead,Quartz beads,Amethyst, Jasper beads, Agate bangle, Carnelian ring, pendant	Agate bangles, bead,Quartz bead,Carnelian Chalcedony Jasper beads, Crystal beads, Garnet beads	Agate bangles, Jasper ear studs, Amethyst beads, Carnelian, Quartz beads	Agate, Carnelian, Jasper beads	Agate beads
Pearl				bead					
Lapis Lazuli					beads	beads		beads	

Chart 8 a (continued)

Raw Materials	*Bhita*	*Kumrahar*	*Pataliputra*	*Vaishali*	*Rajghat*	*Kausambi*	*Narhan*	*Prahladpur*	*Bakraur*
Ordinary Stone	Sandstone celt,Slate celt	Sandstone cross-bar, Granite bead, Slate piece, Marble piece, stone striker	lid	slate bead, stone bangle, pestle	Chert beads, Granite beads balls	Sandstone sculptures			
Steatite/Soap Stone	Steatite base of casket	Soapstone beads				bowls, caskets, lids			
Shell/Coral			beads		beads, Coral beads	bangles		beads	
Faience				beads	pendants, beads	beads			
Ivory		bangle-piece	disc,handle	beads, bangle piece	bangle, stylus, stand, beads	bracelet			

Chart 8 a (continued)

Raw Materials	*Rohtas*	*Khairadih*	*Maner*	*Chechar*	*Erich*	*Banarasi Hankalan*	*Jhusi*	*Ramchaura Hajipur*
Copper/Bronze	coin	armlet, beads rods ,bells coins, bangles fragment of utensil, antim-ony rods, bracelet	Coin		antimony rods	bangles	coins, objects	antimony rods
Iron	slag	nail, knife blade, showel, rod,, lamp, axe, sickle, chisel	spearheads		objects		objects	objects
Semi-Precious stone	Chalcedony lump	Crystal beads, Jasper ear studs		Crystal, Agate beads			beads	
Ordinary Stone	mullers, pestles,saddle querns,hammer, polisher,sharpner, core of chert			objects, beads		Limestone head		
Steatite		wall hanging						
Shell							objects	
Ivory			beads		bangle piece		plaques	

Chart 8 a (continued)

Raw Materials	***Siswania***	***Kasia***	***Lauriya Nandangarh***	***Sonpur***	***Taradih***	***Bodh Gaya***	***Agiabir***	***Buxar***	***Masaon***
Copper/Bronze	antimony rods,need-les,rings, hairpins, bracelets, coins,beads, bangles	coin	coin,wheel with spokes	bangle,nose-ring,finger-rings,rod, antimony rods,wire, nails,hooks, ball,spoon, handle,beads	bangles		antimony rods,rings, coins		coins, seals rings
Iron	nails,rods rings,arrow-heads		knives,celts, daggers,awls, arrowheads	arrowheads, dagger,nails, chisel,sickles, door fittings	nails,arrowheads, spearheads,razors, sickles		arrowhead, chisel,nail, ring,knife, spearhead	beads, objects	spearpoint
Gold					amulet	coins, piece			
Silver		coin							
Semi-Precious stone	beads, bangles			Carnelian, beads,Chalce-dony, Agate Amethyst beads, Jasper,crystal Quartz beads, Chalcedony bangles	beads		Agate,Carnelian beads,Jasper Quartz beads		
Ordinary Stone	weight			Marble beads bangles	beads, images		Chert bead		
Steatite/Soap stone				Soapstone beads, bangles, bangles, toilet case					
Shell				bangles					bangles
Ivory	decorated object wheel, crucibles			beads,bangles hairpins,antimony, rods			seal		

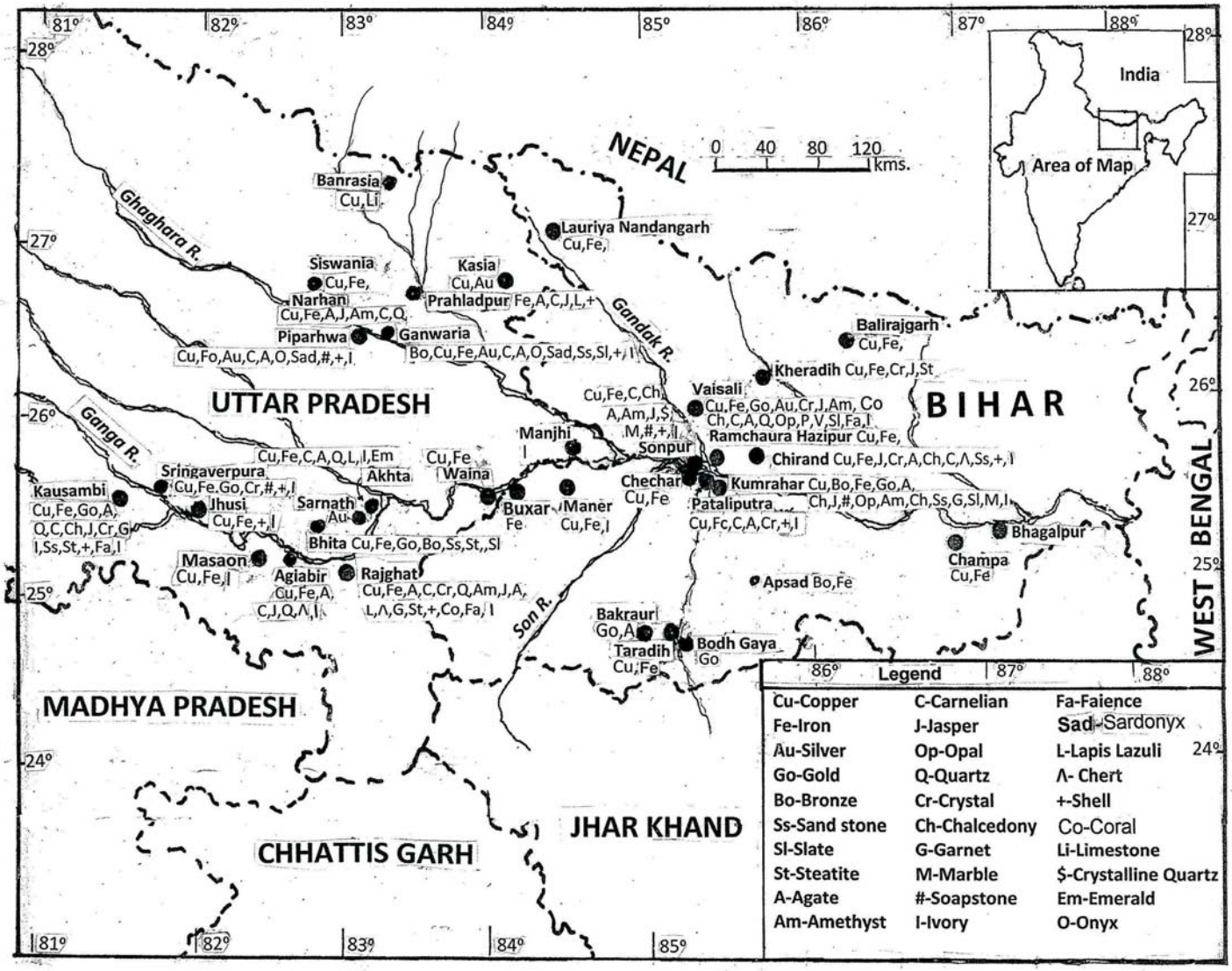
Chart 8 a (continued)

Raw Materials	*Waina*	*Balirajgarh*	*Sarnath*	*Bhandara*	*Manjhi*	*Panda*	*Deokali*	*Gharihat*	*Raja Nala ka Tila*	*Aktha*
Copper/Bronze	objects, antlers	antimony rods, coins	ring	Brass ear		coin, ear rings, antimony rods				Coins, antimony Rods, bongle, ring
Iron	objects	crucibles, nails				knives, rings	slag		sickle, nail, clamps, spearhead, knife, bracelet, chisel, flat bar, khurpi spearhead, knife,	Adze, arrowhead, nails, clamp,rod, sickle, pickaxe
Silver			coins							
Semi-Precious stone		unspecified beads						Carnelian beads		Carnelian beads, Agate, milky Quartz pendant
Emerald										beads
Lapis lazuli										beads
Ordinary stone										Sandstone ball, pestle, weight
Ivory					scale	objects				seal

Chart 8 a (continued)

Raw Materials	*Sringaverpura*	*Piprahwa*	*Ganwaria*	*Apsad*	*Champa*	*Kopia*	*Chirand*
Copper/Bronze	coins,antimony rods,handle of dagger,beads, bowl,vessels	coins,bowls, antimony rods,wires, nails	bowl,Bronze anklets, coins,bangles,rings, ear studs,beads,bells, antimony rods,nail ploughshare,sickle, spearhead,hilt,wire, trident	Bronze bangles	rod,bangle	coins	coins,bangles, antimony rods, wire, ornament miniature pot,beads
Iron	nails,spearheads, arrowheads,rods, crowbar,knife blade, scissors,knife arrowhead, hilt, blades,spatula	nail,knife, razor,sickle, arrowhead, door hinges, clamps,edge spearhead,	knife,razors,sickle, coiled lamp,rod, fragment of trident, spearhead	chisel cup fragment,rod,ring,		arrowheads, nails, pincer, ring,balls, plough, blade	objects, blade, bangle piece ,
Gold	coin, foil						
Silver		coins, ear stud	coins, ear stud				
Semi-Precious stone	Crystal pendant, unspecif ied beads beads, Crystal cube	Carnelian pendant, bead, Agate bead, Onyx beads	Carnelian pendant bead, Agate bead Sardonyx beads	Sardonyx beads		Agate, Quartz beads	Jasper beads, Agate,Chalcedony beads
Ordinary Stone		quern	chisels,Sandstone disc,weights,quern pestle,Sandstone head	beads		Chert beads	Sandstone quern ,stone figurine
Steatite/Soapstone	mould,Soapstone lid	Soapstone pencil casket	Steatite vessel				
Shell	bangles	beads	beads				bangle piece
Ivory	disc,handle of mirror	disc,beads	disc,beads				bangle piece

MAP-8



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE MIDDLE GANGETIC PLAINS c. 200BC – 300 AD

The importance of the middle Gangetic plains, among other things, lies in the fact that it is the region where various political dynasties established and expanded their rule.This was the region where religious faiths such as Buddhism and Jainism had their beginnings. Some of the sites in the central Ganga basin that are connected by literary tradition with the life of Gautama Buddha are: Lumbini, the birthplace of the Buddha, Bodh Gaya in Bihar, the site of his enlightenment, and the first sermon at Sarnath. The *majjhimadesa* as it is known is also noted for the fact that the first state formation in Indian history was located here. Rajgir or Girivraja (Ghosh 1951) and Pataliputra (Sinha & Narain 1955-56) were prominent political centers of the kingdom of Magadha from the sixth century B.C onwards. The middle Gangetic region had cities such as Vaishali in Muzaffarpur district (Deva and Mishra 1950) and Kausambi in Allahabad district (Sharma 1949-50) that served as seats of power. Vaishali is traditionally known as *Raja Vishala ka Garh.*

Structural and artefactual evidence is abundant in the region to substantiate its historical past. Kumrahar in Patna district is known for Buddhist vihara (Altekar & Mishra 1951-55). Rajghat in Benaras district is associated with Kasi one of the sixteen *Mahajanapadas* (Narain and Roy 1957-58). Sringaverapura in Allahabad district is known as an important place associated with the Kushana dynasty (Lal 1977-86). Piprahwa-Ganwaria is a monastery–town complex in Siddharthnagar district (Srivastava 1971). The above-mentioned sites are all important historical sites with substantial cultural material.

Some of the other urban sites that have been explored in the Middle Gangetic plains are Chirand (Verma 2007), Manjhi (Saran district) (IAR 1983-4: 15-16; 1984-85: 12-13), Maner (IAR 1984-85: 11-12; 1985-86: 11-12; 1986-87: 25-6; 1987-88: 11-12), Taradih (Patna district), Kheradih in Ballia district (IAR 1980-81; 1981-82; 1982-83; 1983-84; 1985-86), Kasia (Gorakhpur district), Agiabir (Singh 1999-2000: 31-43), Champa (Bhagalpur district) Aktha (Varanasi) (Jaiswal 2009) and Jhusi (Allahabad district) (Mishra, Pandey and Pal 1995-96: 65). These sites have yielded a lot of cultural material representing the Kushana period.

The Sitewise Distribution of Raw Materials at Different Sites

The range of raw materials used in the post-Mauryan period as per Chart 8a include, copper, bronze, iron, gold, silver, crystal, onyx, carnelian, agate, chalcedony, quartz,

jasper, garnet, sardonyx, coral, opal, pearl, amethyst, sandstone, chert, slate, granite, marble, soapstone, steatite, lapis lazuli, faience, shell, and ivory.

Evidence of Manufacture of Finished Products at Different Sites

Quite a few instances of manufacture have come to light in the middle Gangetic plains for the period concerned. They are elaborated below.

Beads: A few unperforated beads have been found at Rajghat (Varanasi district.). The excavator feels that the site was a flourishing industry of beads in the early centuries A.D. Also, the specimens of unfinished beads indicate the possibility of these being made locally. The material has not been mentioned (Narain and Roy 1957: 27). The absence of waste material and appearance of only three specimens of unfinished beads, two in schist and one in glass found at Piprahwa-Ganwaria (Siddharthnagar district) fails to make it a factory site for mass production of beads although some production was undertaken. However, one finds the occurrence of polishing stones with different sizes of grooves and channels. These indicate that beads here would be cut and polished according to the requirement and taste of the people (Srivastava 1971: 154). Agate beads were found in an unfinished state at Prahladpur in Varanasi district indicates the possibility of these being made locally (Narain Roy 1963: 42).

Iron and Copper: Siswania in Basti district yielded slags and broken pieces of crucibles and pieces of iron and copper. Hearths of various shapes and sizes were also found. All these were noted in the Kushana levels (IAR 1996-97:122). Remains of a metalsmith's workshop were located which came from late NBPW levels to the Kushana period. Natural nodules with metallic contents were noticed on the surface suggesting a worshop for metal work at the site (Mani 2003-04:103). Kachgaon near Basrehi lying near Atrauli is full of iron slag on the surface and yielded pottery of the early centuries A.D. (Chakrabarti 2005: 73).

Character of Sites and the Distribution of Manufactured Objects

Some of the famous urban sites in the middle Gangetic plains have yielded a rich variety of artifacts. Most of them are described in the literary sources as centers and seats of power of important dynasties in the past. Some of these sites are Sringaverapura (Lal 1993), Bhita (Marshall 1911-12: 47-92), Narhan (Singh 1994), Kausambi (Sharma 1949-

50), Rajghat (Narain and Singh 1958-59; 1960-61), Vaishali (Krishnadeva and Mishra 1961), Kumrahar (Altekar and Mishra 1959) and Pataliputra (Sinha and Narain 1955-6). Vaishali is known as the capital of the Lichchhavis in the sixth century B.C. It is traditionally known as *Raja-Vishala ka Garh*. The excavation revealed occupational deposits of the period between c. 500 BC -500 A.D. The brick built defence wall and extensive brick buildings from the Kushana phase are reported here (Kumar 1986: 38).

Basarh, in fact is well known for the numerous *sresthi-kulika-nigama* seals in the early centuries A.D. (Thaplyal 1968: 136). Kausambi had become the capital of the Kauravas of *Mahabharata* sometime after Hastinapur. Kausambi is characterized by a stupa and monastery called *Ghositarama* within a fortified complex revealed in the excavations (Sharma 1949-50: 214). A seal of Kanishka is found here (Sharma 1949-50: 20). The monastery has yielded a large number of sculptures as well as terracotta figurines (Sharma 1949-50: 14). Pataliputra (Narain and Sinha 1970: 1) was a historic city within the kingdom of Magadha. Its earliest history is associated with the Buddha who in one of his journeys from Rajgriha to Kusinagara stopped at the village of 'Patali'. It became an important capital city during the reign of the Mauryas and in the subsequent periods under the Gupta rulers. Extensive ruins are spread throughout the modern city of Patna. The important ruins are visible in Kumrahar in the vicinity of Pataliputra. The remains at the site are that of a pillared hall and a series of wooden platforms nearby dated to the Mauryan period. An apsidal brick *chaitya* dated to c.100-300 A.D. has also been found here (Chakrabarti 1997: 210-11). Rajgir or *Girivraja* , once the capital of the kingdom of Magadha dating back to the earliest phase of the NBPW or at least the sixth century B.C. (Olivelli 2006: 14). As reported by Harding, traces of pre-NBPW occupation at the site were also found (Chakrabarti 2001: 185). Excavations at Rajgir revealed two sets of fortifications which divided into old and new Rajgir with moats. Inner protective enclosures were also noted here (Ghosh, 1951:68, 1990: 298; Chakrabarti 1997: 212-15). At Sringaverapura, the enlargement of the settlement began around the early Christian centuries. The excavations exposed a tank complex that was constructed during this period. Coins of Kushana kings were found from this tank complex (Lal 1993: 14, 54). The excavations conducted at these centers speak of their archaeological richness and substantiate their urban character in terms of artifact yield. Varanasi has been

regarded as one of the oldest settlements in this region. The post-Mauryan period at the site of Aktha near Varanasi marks the expansion of this settlement. Intense structural activity is seen with exposed house complexes. Profuse occurrence of sealings and coins can also be seen at the site. Naigamesh figures and other terracotta and red ware pottery is also seen here (Jaiswal 2009: 9). Narhan yielded red ware pottery, terracotta ring wells and plaques datable to the Sunga period c. 250-100 B.C. (Singh 1994: 35). Bhita was identified by Cunningham as Bitbhayapattana. It was a prosperous trade centre amply seen in the seal of the trader's guild (*nigama*) and a few merchant seal found here (Marshall 1911-12: 48).

The urban sites yielded a large variety of artifacts and in terms of resource usage one finds different kinds of raw materials being used here. Two of the most widespread resources found everywhere are copper and iron. The artifacts comprise of tools, weapons and implements such as dagger, spearheads, arrowheads, nails, socket and latch, blades, scissors, chisel, sickles, drill and axe. Copper coins, antimony rods, beads, bowls and vessels, bell, bangles, rings, ear-pendant, bracelet, amulet and so on have been found in excavations. Kumrahar has yielded a bronze earring (Altekar and Mishra 1951-55: 131).

The precious materials as gold, silver and semi-precious stones have mainly been used in the form of beads, pendants, ear ornaments, amulet and necklace. Gold and silver has been used specifically at urban areas. The sites that have produced artifacts of gold during the Kushana period are Sringaverapura, Bhita, Kausambi, Vaishali, Kumrahar and Pataliputra. As against this, silver has been confined to Vaishali and Piprahwa- Ganwaria, Sarnath and Kasia. The range of raw materials used in most of the urban sites is varied. This diversity in resource-use can be witnessed in the artifact finds here. These sites seemed to have access to a variety of resources and also possessed the technical knowledge for its diverse use.

The distribution of some of the resources in specific regional pockets can be seen within the middle Gangetic plains. Artifacts of lapis have been specifically found at Kausambi in Allahabad district and Rajghat and Aktha in Varanasi district amongst the urban sites. It is noteworthy that Prahladpur in Varanasi district is a small site that has also yielded lapis lazuli beads (Narain and Roy 1963: 48; Jaiswal 2009: 172). This

indicates a regional distribution especially around the Varanasi region that possibly had access to this resource.

The other raw materials used specifically in urban areas are garnet at Kausambi and coral at Rajghat and Vaishali. While coral is a rare material, the excavators of Rajghat claim that, besides this site, coral has been recorded only from three other sites in India namely, Nevasa, Maski and Taxila. The Rajghat coral beads also share certain common features with the beads at the other sites (Narain and Roy 1957-58: 32). This indicates that these beads were manufactured centrally. The other materials used only at urban sites are opal, pearl at Vaishali and Kumrahar, garnet at Kausambi, slate at Vaishali and Kumrahar and granite at Kumrahar. Faience with its specialized production technique is confined to Rajghat, Kausambi and Vaishali.

The second category of sites is the smaller urban sites of the region, prominently visible through their structural and artifactual remains. They are Balirajgarh in Madhubani district, Buxar in Ghazipur district, Champa in Bhagalpur district, Apsad in Nawadah district, Manjhi in Saran district, Agiabir and Maner in Patna district. These are some of the fortified towns of the early historic period. Besides, there are other sites such as Sonpur in Gaya district, Chirand in Saran district, Masaon in Ghazipur district, Chechar in Vaishali district, Kheradih in Ballia district, Prahladpur, Jhusi, Siswania, and Narhan in Gorakhpur district. Some of these also have structural remains of an ancient town. Kheradih is one site where a road with residences on either side dated to the Kushana period was revealed (IAR 1981-82: 67 and 69). Champa was an important city of maritime trade to the Southeast Asia. The city has a defensive fortification surrounded by a deep moat. The Sunga phase has a high brick wall over the rampart. According to B.P. Sinha, numerous well built brick houses of the Sunga-Gupta period have been found at the site. Also a plastered drain in a village outside the fortification is noteworthy (Chakrabarti 1997: 215-16). Buxar yielded cast copper coins, a hoard of Kushana coins and several clay seals and sealings. These were dated between third to the first century BC (Chakrabarti 2001: 177).

The number of urban sites with Kushana period occupation levels is extensive in the region. Some of the urban sites are Jhusi in Allahabad district, Lauriya Nandangarh in Champaran district and Rajgir in Nalanda district and Chirand in the Chapra town and

Dhuriapar in Gorakhpur district (Singh 1991-92: 58).Their structural remains speak of their urban character. Jhusi, according to the excavators, is the name of the region known in ancient times as *Pratisthanapura*, which was part of the *Prayaga-Khetra*. It is mentioned in the *Ramayana* as a city founded by Ila, a legendary king of the lunar dynasty. The antiquities indicate that the site had a long history ranging from pre-NBP to the medieval period (Mishra, Pandey, Pal and Mishra: 1995-96: 63). Chakrabarti (2005: 68) stongly argues that Jhusi owing to its location exactly opposite the present confluence of the Ganga and the Yamuna was the site of Prayag in ancient times. Narhan had a long cultural sequence from the second millennium BC to the seventh century A.D. The structural remains were marked by the use of burnt bricks and several holes cut in the brunt bricks. Ring wells, terracotta plaques datable to the Sunga period and terracotta human heads of Kushana period (Singh 1994: 35). Chirand is a site with the remains of a stupa and images associated with Buddhism. The Buddha is said to have passed very near to Chirand on his journey from Vaishali to Kusinagara. During the Kushana period the site was a flourishing town (Verma 2007: 6-7). The excavation revealed baked brick structures along with copper coin hoard of the Kushana rulers Kanishka and Huvishka. Pottery and terracotta figuries were also recovered (Verma 2007: 13). Dhuriapar yielded red ware and bangles of terracotta of the Kushana-Gupta periods. A copper seal was found with legend in Brahmi of the Kushana-early Gupta period (Singh 1991-92: 60).

A few explored sites with remains of the early centuries A.D. are, Deokali, Bharatpura, Karnai, Gharauli, Bhimpura Sathiyaon , Lohuradeva, Domingarh, Tiyar, Mahathan, Susipar, Chausa and Devangarh, Unchdih, Chhathga and Brahmapur (Chakrabarti 2001: 177, 184, 230; 232, 211, 218, 219, 220,221, 222, 258). Sathiyaon revealed Kushana period remains and on the basis of terracotta sealing found in the neighbourhood, the ancient name of the place was established as Sreshthinagara (Chakrabarti 2001: 211). Nongarh has yielded a broken statue bearing remains of an inscription in early characters of first century A.D. This was made of the Mathura red spotted sandstone and bears resemblance to the drapery to the Mathura statues of the same age (Chakrabarti 2001: 173). Devangarh in the Nawada region produced statues of first century B.C. to first century A.D. The site according to Chakrabarti (2001: 187) was significant for procuring the raw materials from the Chotanagpur plateau.

Copper and iron have a wide distribution in the small urban sites of the middle Gangetic plains. Most of the sites in the region have produced artifacts in these raw materials in varying quantities. Kheradih, Siswania and Sonpur are the only sites that have produced several artifacts of copper and iron. These are antimony rods, bangles, bracelet, coins, ear- pendant, pots, pans and chariot of copper and nails, knife, blade, shovel, rod, axe and chisel of iron. Apsad is one site that has yielded bronze bangles (IAR 1979-80: 14).

Jhusi, Balirajgarh, Narhan and Chechar are the only sites that have produced beads, bangles and ear studs of semi-precious stones that have been left as 'unspecified' in documentation. The finds from Rohtas include a lump of chalcedony (IAR 1985-86: 13). Kheradih is the only site to have furnished a soft-stone (steatite) wall hanging (IAR 1983-84: 87). This seems a special find since none other site has demonstrated such novel use of soft stone. Other than major urban sites, objects of shell were recovered from Jhusi. The objects were however left unspecified here. The only other resources that were abundantly used in these small urban sites are ivory.

Some of the other sites of the region are Ghairhat, Waina, Rohtas, Banarasihankalan, Rampura Hajipur, Panda, Deokali, Raja Nala ka Tila and so on. Kushana assemblage has been found from various sites of the Sitapur district on the Gomti-Ghaghra doab. These are Asodhan Garhi, Basai-dih, Baloiya, Gamera, Husainganj, Koyalgaon, Gangoi and Kasawan (Hem Raj 1994-95: 41). The range of raw materials used is limited and confined to the metals such as copper and iron. Prahladpur has produced beads of lapis lazuli and is noteworthy (Narain and Roy 1963: 48). Ivory were found in the form of dice, seal, beads, stylus and points. Most of these sites yielded terracotta objects.

Amongst the religious sites in the middle Gangetic plains, one finds a different picture altogether. Piprahwa is a famous monastery site in the region. The steatite casket inscription associates the site to the early years of Buddhism. Relic caskets found at the site were contemporary to early phases of NBPW dated fifth-fourth centuries BC (Srivastava 1996: 5-6, 25). The third structural period of the monastery was assigned to first-second century A.D. on the basis of spouted vesels of red polished ware (Srivastava 1996: 23). A terracotta sealing found here carried an inscription in Brahmi characters of early centuries A.D. with the term '*Devaputra*.' It helped in the dating this

phase of the monastery to the Kushana period. The square basement was provided with niches at regular intervals and was meant for keeping sculptures for worship. It corroborated the fact that the Kushana rulers introduced image worship, in Buddhism (Srivastava 1996: 25). The extent of the monastic complex can be known from the adjoining mound of Ganwaria, a town complex located a little away from the monastery. Here the occupational layers were dated back to the sixth century B.C. with the yield of PGW and NBPW. Buddha heads in terracotta found at Ganwaria established its relation to the monastic complex (Srivastava 1992-93: 73). Salargarh was another monastic site east of Piprahwa with a stupa and monastery dated to the second century BC and first century A.D. The monastery here was rectangular on plan and traces of an enclosure wall were exposed all around the monastery (Srivastava 1996: 52). Sarnath, one of the most famous Buddhist sites comprises a huge vihara complex, large monasteries and shrines apart from smaller stupas (Vogel 1904-05: 83).The other religious sites of the period are Taradih in Gaya district and Kasia in the Gorakhpur district. Nalanda is another famous site associated with the Buddha dating back to the sixth-fifth centuries B.C. Pali Buddhist literature contains many references to Nalanda as Buddha had halted here in the course of his journeys. However, the excavations have not revealed anything which suggests the occupation of the site before the Gupta period (ed. Mani 2008: 3-4). Bodh Gaya is an important site associated with the Buddha. A direct association of the Kushana rulers is known from the discovery of a gold coin of king Huvishka. It was found underneath the *vajrasana* at Bodh Gaya. It is stated that the king patronized the building of the temple here (Datta 1998: 152). Cunningham identified Kasia as the famous Kusinagara, the traditional scene of Buddha's *nirvana* (Vogel 1904-05: 34-35). Bakraur in Gaya district is another religious site situated near Bodh Gaya. It is traditionally known by various names like Sujatakuti, Sujatagarh and so on. The legend is associated with the maiden Sujata who offered milk rice to Buddha after he had undergone severe austerities to attain enlightenment (IAR 1973-74:9). Jhimjhimiya-Kalistan at Sarkrigali in the Rajmahal to Sahibganj sector has yielded a Buddhist stupa of first century A.D. This is a well known corridor to Bengal, according to Chakrabarti (2001: 164).

On analyzing the artifact finds from these sites, one finds a similar kind of richness in quality and quantity as in the urban areas. It might be possible that the

presence of shrines in the vicinity of exchange centers served as a passive reinforcement of urban centers (Tripathi 1992-93: 57). From the artifact finds of Piprahwa-Ganwaria, it seems that the site would stand no less than an urban center. The finds from both these sites are rich except that Ganwaria being a town complex is richer in materials. A ploughshare in copper has been the surprise find. According to the excavator, such a find has not been reported from any other site till now (Srivastava 1971: 245). Bronze anklets have also been found from here. Iron has mostly been used in the form of weapons, tools and implements. In the use of precious metals such as gold and silver, Taradih and Kasia (Singh 1991: 122) have produced a gold amulet and coin respectively. At Bakraur, gold ear ornament is found. Amongst semi-precious stones, Piprahwa-Ganwaria is the only urban-cum-religious site to have yielded onyx and sardonyx beads. Silver coins and an ear stud have also been found here. Lapis lazuli beads have been found from sites such as Rajghat, Kausambi, Prahladpur and Aktha- all centered on the Allahabad Varanasi region. It indicates the possibility of import of this non-local raw material from far away Afghanistan to the above mentioned urban sites in the middle Gangetic plains.

Raw Materials Available Within the Sub- Region

Gold

Old workings have been noted at Sithaura and trenches, adits and shafts near Nakia and Pahar in Patna district (Ziauddin and Narayanswami 1974:91).

Ivory

The middle Gangetic plains are known to have deep forest cover in the past. It can be assumed that elephants formed an important part of the fauna of the region. Anga is mentioned in the Mahabharata as an important source of elephants (Sukumar 2011: 48).

Tin

This metal ore is available in the Gaya district at Chakrabandha and Dhanaras (Biswas 1996: 328; Chakrabarti 1988:113; Babu 1994: 36).

Raw Materials Available Outside the Sub-Region

The presence of marble in Rajasthan, pearl in Tamil Nadu and lapis lazuli in Afghanistan has been noted. (p.29,30 and 31).

CHOTANAGPUR PLATEAU

Copper

Old copper mines occur at several places in the region.

Singhbhum district: A line of old copper workings are found in the area. Copper ore occurs at Rakha mine, Garadih, Dhobani, Ramchandra Pahar and Morabani where old copper workings are extensive (Biswas 1996: 325).

Hazaribagh district: Extensive old workings are noted in Baraganda with a number of slag heaps (Biswas 1996: 325).

Iron

The resources are found in substantial quantities in a few areas of the Chotanagpur plateau. Kharagpur hills and Bhimband in Bhagalpur district have iron reserves (Ball 1881:367).

Lead

Lead ores are recorded from some places in the region. The lead mines were located in Dudijor, Karda, Genoa, Khejurea in Bhagalpur district, Chakai pargana; Kharagpur hills too have this resource (Ball 1881:290).

Argentiferous Galena

Galena as sulphuret of lead containing a small quantity of silver is found in the hill tracts of the Chakai Pargana and a protoxide of lead occurs in the beds of the Kharagpur hill streams (IGI Prov. Series: Bengal 1909: 152). Lead ore containing principally argentiferous galena occur in the southern part of Bhagalpur district (Santhal Pargana) in Sankara hills at Turipahar, Beharaki, Panchpahar and Lakshmipur near Naya Dumka (IGI Bengal 1909: 228).

Slate

Slates are quarried at some sectors in the middle Gangetic plains. Bands of slate found for about 6-7 feet in Kharagpur hills and Bhagalpur disytrict. The natives worked these in the past (Ball 1881:441; Brown 1936: 283).

Steatite / Soapstone

Steatite is available in several localities of the Gaya district (Ball 1881:441; Brown 1936: 283).

Sandstone

Kaimur sandstones of the Vindhyan system are querried at Dehri-on-Son in the Shahbad district of Bihar (Brown 1936:158).

Granite

Some amount of granite is quarried in several hills in the middle Gangetic plains in the Gaya district (I.G.I. Bengal 1909: 38).

Quartz, Agate, and Chalcedony

Quartz crystals and masses of agate and chalcedony are abundantly found in the Rajmahal hills in great variety of every size at Buirhat in the centre of the hills (Ball 1881: 441; Mallet 1887: 66). Agate and its varieties such as carnelian, onyx are common occurence in the amygdoloidal flows of the Deccan and Rajmahal traps (La Touche 1918: 152). Mallet (1887: 72) has noted the occurrence of carnelian and topaz at Champar Pahar northeast of Dubrajpore in the Rajmahal hills in the cavities of the trap.

Beryl and Garnet

Important beryl and garnet deposits are found in the Malabar hill in Hazaribagh district (Ball 1881:521, 523). Banded jaspers occur in the Singhbhum district at Ghagidih, Tetoposi, Ugra, Porloyang and Bichagutu (Ball 1881:505; GSI Misc. Pub no.30 1974: 26). Crystals of quartz occur at Majhitola in Santhal Parganas and Chandedih and Bijaia in Hazaribagh district (GSI Misc. Pub no.30, 1974: 26).

Sardonyx

This stone is found in Lakshimpur, Naya Dumka region of Chotanagpur Plateau (Brown 1936: 299; I.G.I. Bengal 1909:208).

Opal

This occurs in the trap of the Rajmahal hills. Masses upto one or two feet have been observed by writers of 19th century near the Sahibganj railway station (Mallet 1887: 81).

Gold

This precious metal occurs at several districts in this region. The richest tracts of gold occur at Manbhum, Singhbhum, Jashpur, Gangpur and Udepur, Lohardaga and so on (Ball 1881: 190).

Singhbhum District: The sub-metamorphic rocks here contain a number of auriferous quartz veins. Gold was produced by crushing of quartz at Landu in Saraikela. Other areas where gold occurs are Kamerara and Kapargadi ghat at Dhalbhum (Ball 1881: 193).

Manbhum district: Localities where gold bearing sands exists are numerous in the district. This occurs in the rocks containing magnesium, mica schists, slates, quartzites included in the sub-metamorphic series. In Supur near the village Namara there is an old gold mine. The natives recollected toBall the find of gold and silver images (Ball 1881: 192).

Tin

Hazaribagh district: Tin ore is known to occur at Nurungo, Semritanar, Pihra and Chapatand (Babu 1994: 36). Old mines are situated adjacent to the village Nurungo in the Dumrithana and Giridh sub-division (Babu 1994: 36).

Ranchi District: Tin occurs at Paharsingh and Johna Silli.

Singhbhum District: Tin ore occurs at Kalikapur in the district (Babu 1994: 36).

Steatite

South east of Tamar pargana a soft kind of steatite allied to soapstone is dug out of small mines (I.G.I.Bengal 1909: 355).

Epigraphic, Numismatics and Literary Linkages

The middle Gangetic plains had links with the Chotanagpur Plateau lying south of the plains. This area covers the eastern parts of Madhya Pradesh, southern regions of Bihar and western regions of Bengal. Kushana coins have been noted at Buxar and Ranchi (Sinha 1974: 768-9). An indication of a Kushana settlement with evidence of stamped pottery, shallow necked jars having Hellenistic influence is known from Saradkel in Ranchi district. A vast collection of non-metalic objects were also found

from excavations at Champa and assemblages at Nongarh, Oriup and Uren demonstrate the exploitation of the Chotanagpur Plateau for raw materials in this period (ed. Sengupta and Chakraborty 2008: 272). A Mathura red spotted sandstone statue of the first century A.D. has been found from Nongarh. The drapery is strikingly similar to the Mathura statues (Chakrabarti 2001:173).

Inscriptions at Bharhut lying between Jabalpur and Allahabad record donations by inhabitants of Pataliputra of the second century B.C (ed. Luders in CII 1963: 18-19). It indicates the movement along the trade routes and connection between urban political centres in the middle Gangetic Plains to centres of Buddhism as far as central India.

The middle Gangetic plains consist of vast alluvial tracts along the Ganga and its tributaries. Yet the region possesses substantial reserves of raw materials. Alluvial gold, iron, copper and lead were provided to the middle Gangetic plains from the different regions. They were in all probability obtaining their raw material especially semi-precious stones such as agate, jaspers, amethyst and quartz crystals, opal, beryl, carnelian and other raw materials as gold, silver and tin and steatite from the Chotanagpur plateau. Pearl was possibly procured from far south in Tamil land. The plains were dependent on Rajasthan for Makrana marbles. The middle Gangetic plains were also linked to Badakshan in Afghanisthan for lapis lazuli. The find of Kharosthi inscriptions as far as Chandraketugarh in the lower Gangetic plains speaks of the movement of people from the northwest region to the eastern most provinces (De 1992: 178-180).

On the whole the middle Gangetic plains during this period were dependent on the restricted reserves of its own available resources on one hand and were significantly dependent on the Chotanagpur Plateau in the south, the Rajasthan in the west and Tamilakam in the south. To an extent the region was able to use its own resources.

Lower Gangetic Plains and the Chotanagpur Plateau

The lower Gangetic plains, for the purpose of this chapter, has been taken to include the Kishenganj tehsil of Purnea district of Bihar, the whole of West Bengal excluding the Purulia district and the mountainous parts of the Darjeeling district and most of Bangladesh as well. Though this whole plain is perceived as deltaic, the real delta constitutes about two-thirds of the plain lying to the south of the

Chart 9a

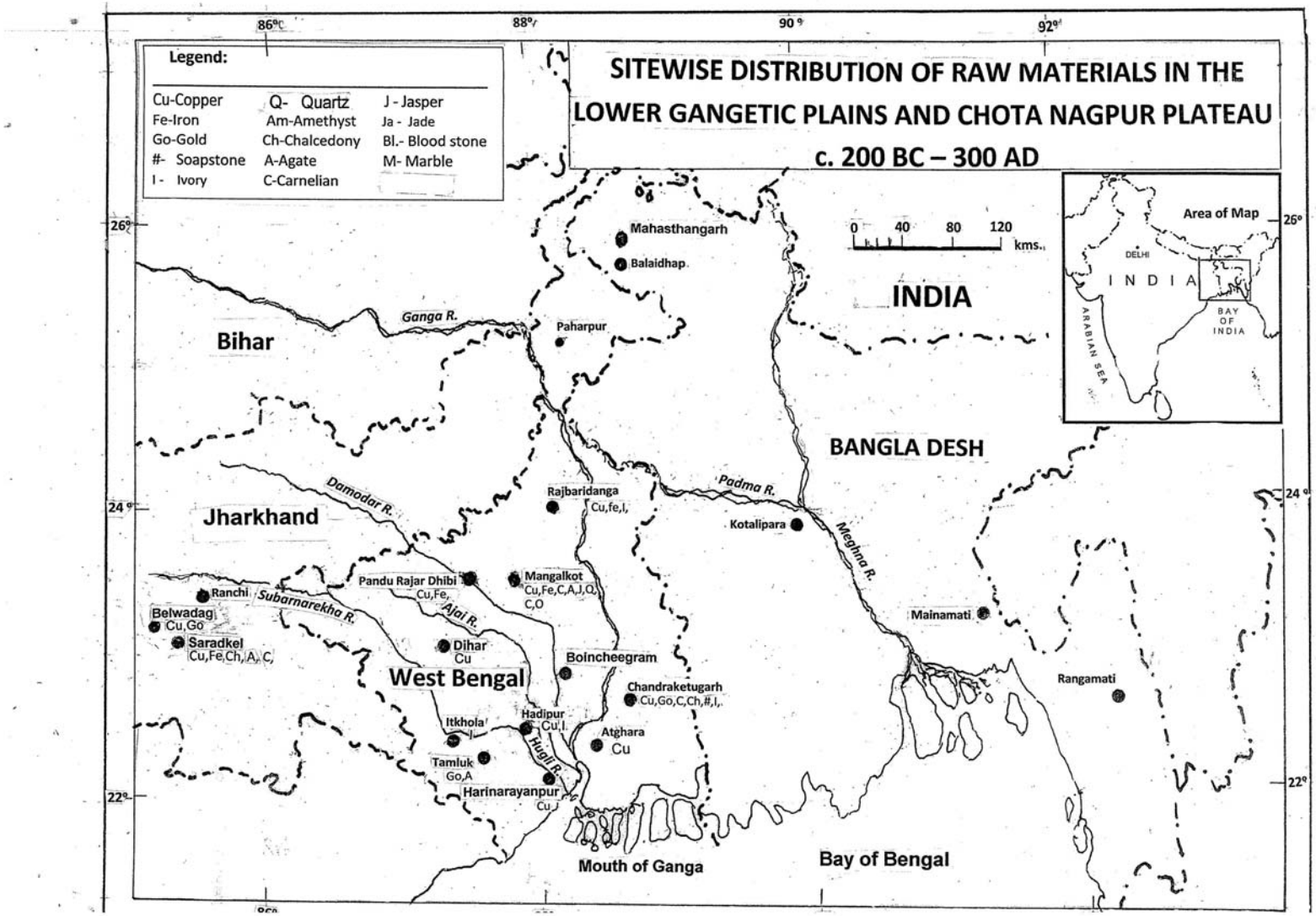
Lower Gangetic plains and Chotanagpur Plateau----200 B.C.—300 A.D.

Raw Materials	*Chandraketugarh*	*Dihar*	*Atghara*	*Tamluk*	*Harinara-yanpur*	*Itkhola*	*Hadipur*	*Rajbaridanga*	*PanduRajar Dhibi*
Copper/Bronze	coins, antimony rods	coins	coins		coins		bowls	objects, nails	cast coin
Iron								nails	objects
Gold	coin			coin					
Semi-Precious	Carnelian beads			Agate beads					
stone	Chalcedony beads								
Ordinary Stones	beads	unspecified beads						unspecified objects	
Steatite/Soapstone	caskets								
Shell	bangles								
Ivory	awls, cosmetic sticks, disc, caskets						objects awls		

Chart 9a (continued)

Raw Materials	*Mangalkot*	*Bangarh*	*Saradkel*	*Belwadag*	*Sambodhi*
Copper/Bronze	ring,bangle,fingerring, antimony rods, bowls, earring, needles,	coins,ring,bangles, antimony rods,coins	hooks,rods,coins	bracelets	
Iron	nails	nail,chisel,awl,	arowheads,chisels nails,ploughshares, caltrops, rings, door hinges,knives		
Gold		pendant,amulet		coins	
Semi-Precious stone	Carnelian,Agate, Jasper Beads, QuartzCrystal beads, Crystal,Onyx beads	Carnelian,Agate beads Carnelian,Quartz Chalcedony,Amethyst Jasper beads Bloodstone beads	Chalcedony,Agate, Carnelian beads		Crystal Casket, phial, Agate beads,
Jade		beads			
Ordinary Stone	unspecified stone pestle	Marble beads	unspecified stone saddle quern		Marble casket

MAP-9


SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE
LOWER GANGETIC PLAINS AND CHOTA NAGPUR PLATEAU
c. 200 BC – 300 AD
Legend:
Cu-Copper
Fe-Iron
Go-Gold
#- Soapstone
I - Ivory
Q- Quartz
Am-Amethyst
Ch-Chalcedony
A-Agate
C-Carnelian
J - Jasper
Ja - Jade
Bl.- Blood stone
M- Marble
0 40 80 120 kms.
Area of Map
DELHI
INDIA
BAY OF INDIA
ARABIAN SEA
INDIA
BANGLA DESH
Bihar
Jharkhand
West Bengal
Ganga R.
Damodar R.
Subarnarekha R.
Ajai R.
Padma R.
Meghna R.
Hugli R.
Mahasthangarh
Balaidhap
Paharpur
Rajbaridanga Cu,fe,I,
Kotalipara
Pandu Rajar Dhibi Cu,Fe,
Mangalkot Cu,Fe,C,A,J,O, C,O
Ranchi
Belwadag Cu,Go
Saradkel Cu,Fe,Ch,A,C,
Dihar Cu
Boincheegram
Chandraketugarh Cu,Go,C,Ch,#,I,
Mainamati
Rangamati
Itkhola
Hadipur Cu,I,
Atghara Cu
Tamluk Go,A
Harinarayanpur Cu
Mouth of Ganga
Bay of Bengal
26°
24°
22°
86°
88°
90°
92°

Rajmahal-Garo alignment. The region spreads from the foot of the Darjeeling Himalaya in the north to the Sundarbans and the Kanthi littoral in the south. The area has a maximum stretch of five hundred and eighty kilometres. In the west, it begins from the edge of the Chotanagpur Highlands to the border of Bangladesh and Assam in the east with a maximum stretch of two thousand kilometers (Singh 1971: 252). The Chotanagpur Plateau is the northeast projection of the Indian peninsula comprising the Santhal Parganas, Ranchi, Singhbhum, Palamau, Hazaribagh and Dhanbad districts formerly in the state of Bihar (Singh 1971: 650).

The region of *Pundravardhana* identified with modern Mahasthangarh in the northern province of Bengal formed part of the Mauryan empire and is attested by an inscription dated to third century B.C. Find of Sunga terracottas at Mahasthan, Tamluk and some sites in the Murshidabad district along with Kushana coins at Mahanad in the Hoogly district throw light on the period intervening between the Mauryan and the Gupta empires (Goswami 1938-41: 1). Mahastangarh is a prominent political centre from the Mauryan period onwards. The fortification, though, dates from the Gupta and post-Gupta periods (Chakrabarti 1992: 50).

Some of the explored sites in the region are Itkhola in 24 Parganas district, Dihar in Bankura district (IAR 1963-64; 1976-77: 73; 1983-84: 93; 1986-87:97). Other such sites are Boral, Harinarayanpur, Tamluk in Midnapur district, Bahiri in Birbhum district, Pokharna, Kandaran in Malda district are some of the other sites of this region (Chakrabarti 2001: 142, 148, 151, 117, 114, 74; Chakrabarti and Chattopadhyaya 1992: 154,137). The explored sites in the Chotanagpur plateau are Saradkel (Ranchi district), Belwadag Sambodhi, and Singhbhum (Chakrabarti 1993; Bhengra 2007; Lahiri 1996-97: 96; Chattopadhyaya and Sanyal 2008).

The Sitewise Distribution of Raw Materials

The range of raw materials used during this period as per Chart 9a are, copper, iron, gold, carnelian, jasper, quartz, agate, crystal, chalcedony, jade, bloodstone, onyx, marble, shell, ivory and bone.

Evidence of Manufacture of Finished Products at Different Sites

Iron: The astonishing large number of iron objects at Saradkel in Ranchi district along with slag would indicate that iron industry played an important part in the economy of this culture (IAR 1964-65: 6). In the pits charcoal, iron slag and sand were found indicating that they might be iron-smelting ovens (Chakrabarti and Lahiri 1988:42).

Crystal: Several unfinished beads and flaked stones were found at Mangalkot, indicates local manufacture of these beads (IAR 1987-88: 114).

Character of Sites and the Distribution of Manufactured Objects

A variety of sites are found in the lower Gangetic plains with their descriptions in the literary texts. Some of the other sites that have revealed post-Mauryan period cultural material are, Pandu Rajar Dhibi, Mangalkot, Chandraketugarh, Hadipur, Kankandighi, Rajbaridanga (IAR 1983-84: 93; 1984-85: 97-98; 1986-87: 97; 1956-57: 30; 1965-66: 59-60 and Chakrabarti, Goswami and Chattopadhyaya 1994: 142; Das 1968). Bangarh in the South Dinajpur district is one of the early historic sites in northern part of Bengal and was ancient Kotivarsa; an administrative unit under the larger unit of *Pundravardhanabhukti* with its capital at Mahasthangarh.The area became prominent from the third century B.C. onwards. Bangarh was excavated by K.N. Dikshit who unearthed residential buildings of a very large size and a rampart wall of burnt bricks of Sunga-Kushana period, drains, and cess-pits (Chakrabarti and Chattopadhyaya 1992: 152; Chakrabarti 1998: 60). Amongst the collection of sculptures listed, Chakrabarti (2001: 82) reported a Buddha image in sandstone in *Dhyani* mudra and a Buddhist female deity in black basalt. The Salvahan mound contains ruins of stupa or temple. Also, Batasan Satiman Dangi mound has remains which indicate that it was a Buddhist monastic site. Deuli contained ruins of several Buddhist stupas and monasteries (Chakrabarti 1992: 144-45). The above evidence possibly indicates that Bangarh was an urban-religious site of this period. Kandaran in the Maldah district yielded a large collection of Kushana terracottas which indicate an earlier date for the site (Chakrabarti 1998: 60; 2001: 74). Traces of a rampart are seen around the mound at Kandaran along with structural remains of a stupa or temple. Also, stamped pottery chartacteristic of Kushana-Gupta period was seen here alosngwith the Kushana terracottas (Chakrabarti 1992: 74).

Rajbaridanga in Murshidabad district is locally known as Raja Karna's palace and is identified with the urban site of Karnasuvarna which became prominent in the seventh century as the capital of the ruler Sasanka. This would be more relevant for the next chapter but since it has some second century AD material, I am mentioning it here as well. Rajbaridanga contains the ruins of the Raktamatrika mahavihara as identified by monastic seals from the site of Chhiruti (Chakrabarti 2001: 123). This urban settlement of Karnasuvarna was described by the excavator as 'high lands, mounds and scattered ruins' and was itself a complex of mounds as opined by Chattopadhyaya (reprint 2006: 68). Some of the associated mounds at the site are Rakshashidanga, Thakurbadidanga, Sannyasidanga, Bhimke-talao and Yamuna-talao; Rajbadidanga being one of the largest mounds in the settlement complex of Karnasuvarna (Chattopadhyaya 2006:68). The evidence of burnt grains mainly wheat and rice in a small trench in the site of Rajbadidanga revealed that the area possibly formed part of a big granary (Chattopadhyaya 2006: 67; Ghosh 1991: 360). The excavations at both Rakshashidanga and Rajbadidanga have exposed 'sacred segments' in the form of Buddhist monastic establishments and relics (Chattopadhyaya 2006:69; Ghosh 1991: 360). The antiquities revealed were terracotta seals with Roman letters dated to second century A.D. The site was occupied from second-third century A.D. to the twelveth century A.D. (Das 1968: 8, 43; IAR 1968-69: 43). Mahasthangarh in the Bagura district in Bangladesh was a prominent urban site dating from the third century BC to sixth century A.D. The site had a fortified enclosure. The ancient city of *Pundravardhana* was identified with the site of Mahasthangarh. It flourished mostly in the Gupta period. Around the fortified enclosure of Mahasthangarh were several early historic and later settlements around it. These were Govinda bhita and Bairagir bhita which have remains mostly from the Gupta period (Chakrabarti 1992: 50, 61).

Chandraketugarh in the north 24 Parganas district is locally known as Berachampa. It has a large structural mound known as Khana Mihirer Dhibi (Chakrabarti, Goswami and Chattopadhyaya 1994: 141). The excavations revealed a rampart and a large structural mound. The occupation levels of the early phase correspond to a pre-Gupta phase and 'show signs of *kachha* houses built of wood, bamboo and tiles and mud walls and plinth' as described by the excavator (Chattopadhyaya 2003: 77). Some thousand terracottas of the first century A.D. have been found from Chandraketugarh

(Goswami, Chakrabarti and Chattopadhyay 1994: 143). Mangalkot in the Burdwan district was an extensive site with a rampart wall enclosing it. There were a number of scattered mounds within the rampart namely, Vikramadityer dhibi, Kachari danga and Sarkari danga (Chattopadhyaya 2006: 61). One does find large-scale brick activity with floors of rammed mud and ring wells. Burnt brick structures are are found substantially from the first to the third centuries A.D. One more indication of its urban character is the occurrence of sherds of rouletted ware indicating Mangalkot's connection with Indo-Roman trade (IAR 1986-87:97). Also a large number of Sunga-Kushana terracottas have been found here (Chakrabarti 2001: 117). Kotasur in Burdwan district have revealed a mud fortification in explorations and Pokhanna in Birbhum district too was a moderate urban settlement of pre-Gupta-Gupta period on the basis of the antiquities recovered (Chattopadhyaya 2006: 60). Pandu Rajar Dhibi in the Burdwan district revealed evidence of proto-historic civilization of second millennium B.C. and Sunga-Kushana pottery has also been found here (Das Gupta 1963:38). Pandu Rajar Dhibi is an urban settlement with extensive structural remains. The site has walls of baked bricks and has also yielded a mud oven (IAR 1962-63: 46). Tamluk or ancient Tamralipti in Midnapur district revealed several sprinklers, rouletted ware, terracotta ring wells and a well stepped tank from the layers dated first-second century A.D. (Chakrabarti, Goswami and Chattopadhayaya 1994:154). The excavations revealed burnt brick structures, presence of rouletted ware indicating some form of Indo-Roman contact and terracotta art specimens and seals and sealings in Brahmi as well as Kharosthi This possibly indicated the beginning of urban characteristics in this phase (Chattopadhyaya 2006 :58). Bahiri in the Contai area was also an early historic site dating back to the Sunga period (Chakrabarti 1998: 64). Kushana-Gupta period terracottas were found at this site as well (Chakrabarti 2001: 151). Roman amphorae and a Greek inscription have been found from here (Chattopadhyaya, Goswami and Chakrabarti 1994: 156-57).

Patharghata, another site in the Bagura district, yielded a female torso in the unmistakable Kushana style. No other occupational remains from this period were noted (Chakrabarti 1992: 53). Other spots where sculptures of Kushana tradition have been found are Skander Dhap near Mahasthangarh, where a Kartikeya red sandstone image was found; Narhatta in Bagura district; Kumarpur in Rajshahi district; and Mahisantosh in Rajshahi. The Kushana sculptures are referred to as pre-Gupta (Chakrabarti 1992: 53).

Saradkel in Ranchi district in the Chotanagpur Plateau is a so called 'Asura' site located on the bank of Tajna river and was a mono-cultural site with two clearly defined occupational periods (Chakrabarti and Lahiri 1988: 36). The local tradition connects this site with Asuras who were probably the predecessors of the Mundas, the local population. Period II has intensive building activity and has structural remains in form of a massive defence wall of baked bricks which runs along the periphery of the mound. Houses were built of burnt bricks as well as mud brick and oriented roughly along cardinal directions. Some houses had floorings of brickbats and a few were well rammed (Ghosh 1991: 393; IAR 1964-65: 6). Iron smelting was noted at Saradkel in the early centuries A.D. The large number of iron objects found at the site suggests a full fleged iron industry here (Ghosh 1991: 393). Wheel made pottery was present along with Kushana coins at the site. The typical forms such as lid, sprinkler, combined with incised decorated designs strongly suggest it to be a Kushana period complex (Chakrabarti 1993: 55; IAR 1964-65: 6). Bamanghati in Singhbhum district has yielded a Roman gold coin near the Mayurbhanj border (Chakrabarti 1993: 205). At Champa showed the indication of a Kushana settlement in the Vth Stage with stamped pottery and shallow necked jars having Hellenistic influence (Chattopadhyay and Sanyal 2008: 272). Period II at Champa is dated to the second to the fourth-fifth century A.D. brick structural activity is noticed. Walls and spouted ceramics of dull red and gray ware along with terracotta figurines were found (Chattopadhyay and Sanyal 2008: 258).

In terms of resource-use, in the early historical period, different kinds of raw materials seem to have been used in the urban sites. Copper is the most commonly used resource. The artifacts of copper comprise coins, bangle pieces, rings, finger and earrings, antimony rods and needle and have been found at all kinds of sites. No bronze artifact has been recovered from any of these sites. Regarding iron, the distribution is confined to a few urban sites. These are Rajbaridanga, Pandu Rajar Dhibi, Mangalkot and Bangarh. The artifacts are mostly reported as unspecified objects but finds comprising nails from Mangalkot leaves no doubt that the material was used for the manufacture of tools, weapons and implements only. Chandraketugarh however did not produce any iron artifact. More than anything else, the absence may have to do with inadequate reporting. As far as precious metals are concerned, the early historic period levels in the urban sites discussed above do not yield many artifacts in gold. None of the urban sites except Chandraketugarh, Tamluk and Bangarh have produced gold coins.

Semi-precious stones were used only in the urban areas in the lower Gangetic plains. Two of the three sites in Chotanagpur province have yielded beads of semi-precious stones. Also their variety seems to have greatly reduced in number with the largest number of them only from a single site of Mangalkot and Bangarh.These were carnelian, jasper, agate and crystals that are found in the form of beads here. Of these, noteworthy are onyx beads from Mangalkot and Jade beadsfrom Bangarh. Marble beadswere found from Bangarh. Shell has only been used only at Chandraketugarh where shell bangles were found. All together, the urban areas of the lower Gangetic plains in the early historical period did not yield a large range of artifacts.

Some of the smaller sites in the lower Gangetic plains and explored sites in Chotanagpur region include rural settlements such as Dihar in Bankura district and Hadipur in 24 Parganas. Chalcolithic levels along with early historical period remains have been found at Dihar (IAR 1983-84:93). Hadipur, lying on the outskirts of the fortification at Chandraketugarh, has been identified as a village (IAR 1965-66: 60). Hadipur exposed ancient occupational remains outside the fortification. The remains are extensive and are dated from the beginning of the Christian era (Chakrabarti, Goswami and Chattopadhaya 1994: 142). Rouletted ware occurs in the first century A.D. phase here. Also, a Mathura sandstone Bodhisattva head was found (Chakrabarti 2001: 137). At Hadipur, a large number of terracotta figurines and objects and beads along with some inscribed materials in Brahmi, Kharosthi and supposedly a script combining the two have been found at the site (Chakrabarti, Goswami and Chattopadhya 1994: 142). Itkhola in the same district is another site that has produced rouletted ware for this period (IAR 1963-64:64). A rampart has been noticed from the first century BC. Later part of the fortification could be dated to the first century A.D. (Chakrabarti 2001: 137). Pottery and sculptures of Kushana period are found at Itkhola in 24 Parganas district (IAR 1963-64: 64).The Baracpore-Belgharia area of the 24 Parganas reported an early historic site at Nimta. Red and gray ware pottery, stamped and rouletted wares were found. It is understood that Nimta continued to be a prosperous settlement between the Mauryan and Gupta periods (Chakrabarti, Goswami and Chattopadhyay (1994:141). Tildah in the Midnapur district yielded a plaque inscribed with an inscription supposedly in Greek (Chakrabarti, Goswami and Chattopadhyay 1994: 154). Mahanad in the Hoogly district was probably a rural site that yielded Kushana coins (Goswami 1948: 2). Boral in the Calcutta area has yielded

Sunga-Kushana and Gupta terracottas in profusion. Also Atghara near Baruipur has presence of Sunga-Kushana red ware (Chakrabarti 2001: 142, 148). Harinarayanpur yielded early historical period pottery, sprinklers, Sunga-Kushana terracotta figurines and semi-precious stone beads (Chakrabarti 2001: 148). Pokharna in the Bankura district yielded Kushana terracottas; a terracotta ringwell was also visible at the site (Chakrabarti 2001: 114). Jatar Deul yielded a few copper coins of Huviska, the Kushana ruler (Chattopadhyay, Goswami and Chakrabarti 1994: 150).

In the Chotanagpur region, Belwadag is an explored site (Chakrabarti 1993: 59). Regarding resource usage, the sites discussed above yielded the artifacts made of raw materials that are commonly available. Sites such as Dihar and Hadipur had furnished copper coins and bowls dated to the Kushana period. Belwadag in Ranchi district yielded gold coins of Kushana rulers (Chakrabarti 1993: 56). Agate, carnelian, chalcedony, the different varieties of semi-precious stones have been used as beads and caskets in Belwadag and Sambodhi. All the other sites have artifacts made of ordinary stones mostly in the form of beads and sculptures. Apart from all this, Hadipur is the only rich site with ivory (IAR 1965-66: 60). Its proximity to the town of Chandraketugarh is well substantiated by the finds. It was probably a hinterland to the nearby town.

Sambodhi in the Santhal Parganas is a religious site in the region. It originally had a relic stupa dated to the first century A.D (Lahiri 1996-97: 96). Its only finds are agate and crystal beads and caskets and marble caskets.

Raw Materials Available Within the Sub- Region

Copper

Remains of old mines at Chhedapathar and Tamkum with shafts in Bankura district have been noted (Chakrabarti 1988: 111). The natives washed low-grade ores in the past in the Darjeeling district. Also copper mines were found in Raniganj region (Brown 1936: 90; Mallet 1887: 6).

Iron

Birbhum district: Ball (1881: 364) reported native furnaces from Narayanpur, Deocha, Dumra and Goanpur:

Burdwan district: Iron ore in form of carbonate is found near Raniganj with the surface of hametite and limonite (I.G.I. Bengal 1909:264).

Gold

Alluvial gold occurs in small quantities in the some districts in the region. Also gold is found in the Dalkissar and Midnapur districts (Ball 1881: 189).

Steatite

Bands of steatite were available in the region. Its occurrence has been noted in the Midnapur district (Ball 1881: 441).

Ivory

The vast forest covers of the northeastern region especially South Chachar, Mizoram, Tripura and Manipur supports a small elephant population. Therefore the availability of ivory is very natural (Sukumar 1993: 18).

Conch/Shell

The proximity of the lower Gangetic plain to the sea indicates the availability of conch and shells within the region.

CHOTANAGPUR PLATEAU

Iron

Iron-ore is available in Chaibasa, Pansira, BuruBuda regions in the Singhbhum district, Manbhum district. Native furnaces were noted here, Hazaribagh district, Palamau and Lohardaga district and Rajmahal hills (Ball 1881: 375; Brown 1936:108; I.G.I. Bengal 1909:335,228).

Gold

Occurrence of gold has been previously noted on p.79

Semi-precious stones

Some of the semi-precious stones such as jasper, garnet and beryl (p.76) carnelian and onyx are found in this region.

Silver: Lead along with Galena occurs in Barahmasia, Baragunda in Hazaribagh

district (I.G.I Bengal 1909:335; Ball 1881: 291).

Raw Materials Available Outside the Sub-Region

MIDDLE GANGETIC PLAINS

Sandstone

It is worked extensively at Kaimur ranges at Chunar, Mirzapur (Ball 1881: 540).

CENTRAL INDIA

Marble: It is extensively quarried near Rohtasgarh on the Son (Ball 1881: 462)

TURKESTAN

Jadetite

The availability of this stone has been noted on p.31.

Epigraphic, Numismatic and Literary Linkages

The find of Kharosthi script on terracotta plaques from Chandraketugarh and Parvatipur in Tamluk and Pandu Rajar Dhibi indicate interaction with North West part of the subcontinent (De 1992: 178-180). Cast copper coins of Kushanas also reached as far as West Bengal (ed. Jha 1991: 48). B.N. Mukherjee has cited Chinese sources datable to the third century A.D. which refer to Yueh-Chih merchants (traders from the Kushana kingdom of northwest) in Vanga. There was a continuous import of horses to Malaya Peninsula via Vanga. The link is substantiated by the find of inscriptions in mixed script in Thailand (ed. Jha 1991: 47). The same has been noted by H.P.Ray (1987-88: 87). The movement of men as well resources from far off north western regions within the Kushana Empire such as Turkestan was thus a strong possibility.

During the early historic period, a lot of resources were procured from within the Lower Gangetic Plains and Chotanagpur Plateau. These were copper, gold, iron, jade, steatite, and shell, and ivory. Semi-precious stones included crystal, agate, jasper, gold, iron, amethyst and chalcedony. Sandstones were in all probability obtained from the middle Gangetic plains during this period. Resouces such as jade was possibly obtained from as far as Turkestan by the traders of the northwest whose presence in Lower Gangetic Plains is known through the Kharosthi inscriptions found in the region.

Northeast India

North east India includes Nagaland, Manipur, Tripura, Mizo hills and Chachar hills of Assam (Singh 1971: 493). The historical sites excavated in the region are few. These are Sekta in Manipur (Sharma 1994) and Vadagokugiri in Meghalaya (Sharma 1993).

Sitewise Distribution Of Manufactured Objects

The chart 10a shows the different raw materials used at Sekta. These are copper, bronze, iron and shell.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture was seen in this period.

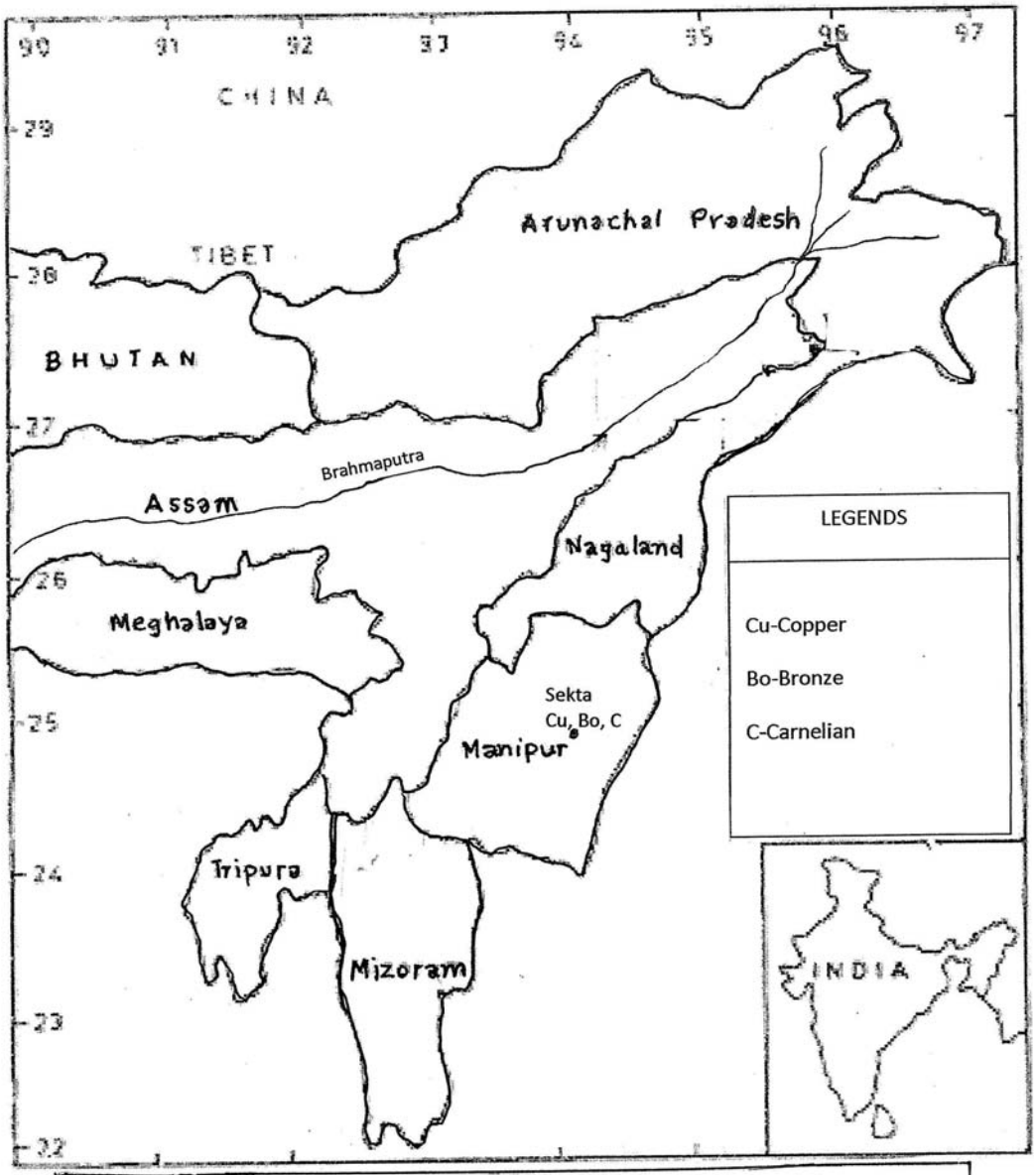
Character of Sites and Distribution of Manufactured Objects

Sekta in Manipur in the northeast region is the most well excavated site for this period. It was largely a megalith site, dating from the late centuries B.C. (IAR 1990-1: 52-3).Urn burials of seven periods were encountered. A bronze relic casket of Buddhist origin was also recovered. It is assigned to period V (dated to Kushana-Gupta period) (Sharma 1994: 25). Pottery of second third centuries BC was found at Sekta (Sharma 1994:1). Some long necked bulbous jars and spouted vessels all in red ware with stamped designs and symbols have also been found from Kushana-Gupta period levels (Sharma 1994: 28). Vadagokugiri in Meghalaya is a Buddhist stupa site. The site is enclosed by a brick rampart with a moat and outer fortification. Adjoining the village of Nalbari ruins of two temples were reported locally known as Jor Mandir (Sharma 1993: 25). Excavation revealed a continuity of occupation on the site prior to the Christian era and reached its peak in the ninth-tenth centuries AD. Pre-stupa habitational layers were noticed at the site of Bhaitbari below the base of the stupa (Sharma 1993: 25). Chakrabarti (1998: 29) observes that the pottery could be compared to that found from Sekta in Manipur and several sites in the Gangetic plains. Guwahati in Assam was enclosed by a brick reinforced earthen rampart. A moat was exposed all along the fortification. Excavations revealed a continuity of occupation on the site from a date prior to the beginning of the Christian era (Sharma 1993: 25). Surface collection of pottery from Tezpur yielded a particular pottery type of c. 200 BC (Sunga bowl). The site later became famous for the Dah Parvatiya

Chart 10a
Northeast India—Post-Mauryan period—c. 200 B.C.---300 A.D.

Raw Materials	*Sekta*
Copper/Bronze	pots, plates,rings, bracelets, masks, trinklets, bowls, Bronze relic casket, bronze bangles, coin
Iron	ring, dagger, knife, spearhead, bangle
Shell	bangle

MAP-10



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE NORTHEAST INDIA

C. 200 B.C. - 300 A.D.

temple of seventh century A.D. (Chakrabarti 2006: 322). Sites such as Ambari and Duborani in Goalghat in Assam have been excavated but have mostly yielded structures and artifacts dating from the Gupta–post-Gupta periods (Chakrabarti 2006: 439; IAR 2001-02: 14). A few votive stupas at Surya Pahar in Goalpara district were assumed to belong to early centuries A.D. on the basis of stylistic consideration as observed by R.D.Choudhury (Chakrabarti 1998: 29). Another such site is the Thakurani tilla at Pillak in Tripura. Unfortunately, the excavations produced no archaeological remains prior to the sixth century A.D. Inscriptions dated to the eighth century A.D. reveal it as a centre of Buddhism (Chauley 2004-05: 196).

A substantial number of copper artifacts have been found at Sekta. Their usage ranges from pots, plates, rings, bracelets, trinkets of bronze.Sekta being a stupa site yielded a bronze relic casket. Iron artifacts were few in comparisson to copper ones. These were ring, dagger, knife, spearhead and bangle. Other than these metal artifacts shell bangle was found at the site.

Raw Materials Available Within the Sub- Region

Copper

Nickeliferous copper sulphides are found at Nungau and Kongal as small lenses and veins. Other such occurrences are reported from Ningthi, Kwatha and Humine. Old pits have been noted at Sadangching hill (G.S.I. Misc. Pub. No. 30, Part IV, 1974: 62).

NAGALAND

Iron

Ferruginous conglomerates and iron laterite occur at the base of Tipan Sandstones in Merapani area of Mokokchung district (Ghosh 1979: 9).

Raw Materials Available Outside the Sub- Region

BENGAL

Shells

The availability of shells has been noted on p.90

Epigraphic, Numismatic and Literary Linkages

The find of a pottery specimen identified as the in-curved "Sunga bowl" from the Dah

Parvatiya site of Tezpur in Assam dated c.200 BC indicates that the northeastern region was possibly within the fold of Gangetic plains (Chakrabarti 1998: 22). Pundravardhana in north Bengal was an important administrative unit from the early historical period. The Pundravardhana-bhukti was an important administrative unit under the Mauryan administration as is demonstrated by the Mahasthan inscription of third century B.C. The epigraph informs us that a provincial governor was posted in Pundravardhana (Goswami 1948: 1; Chakrabarti 1992:47). The possiblity of the Brahmaputra valley being within the fold of the Mauryan administration from Pundranagara was strongly suggested by Chakrabarti (1998: 25). It is possible that contact with the Gangetic plains was through Pundravardhana.

Our survey revealed that Sekta in Manipur was the most well excavated site in this region among other sites. The resource yield from here is however not substantial. No manufacturing activity has been noted in the region. Resources such as iron, copper, and shells were obtained from Nagaland and Bengal respectively. It can be postulated that there was a movement of goods in the early centuries A.D. in the region because in the post Gupta period too the region was thriving with small kingdoms.

Orissa

The alluvial plain of the Deccan plateau extends into the southeast corner of the state. The extensive coastal plains are formed by the alluvial fillings of the littoral zone comprising some of the largest deltas.Other natural regions in Orissa include the inland northern plateau and the Eastern Ghats (Singh 1971: 754, 932).The major early historic sites in Orissa are Sisupalgarh in Puri district (Lal 1949: 67-97), Jaugada in Ganjam district, Lalitgiri and Udayagiri in Cuttack district (Bandopadhyaya 2007). The former identified with ancient Kalingnagara, the capital of king Kharavela and the latter is the famous find spot of Ashokan inscription, besides Dhauli. Archaeologically, only two early historic town sites have been excavated in Orissa: Sisupalgarh and Jaugada (Chakrabarti 1997:240). Some of the sites surveyed here are, Sisupalgarh and Jaugada, Dhauli, Manamunda-Asurgarh, Manikapatna, Palur, Radhanagar, Lalitgiri and Udaygiri and so on (Puri 1966; Chakrabarti 1997; Chakrabarti 1998; Tripathy 2000; Pradhan, Mohanty and Mishra 1995-96: 120-1; Tripathi and Mohanty 1997-98: 86; Mishra 2000; Bandopadhyay 2007; IAR 2001-02: 142).

Chart 11a
Orissa –c. 200 B.C- 300 A.D.

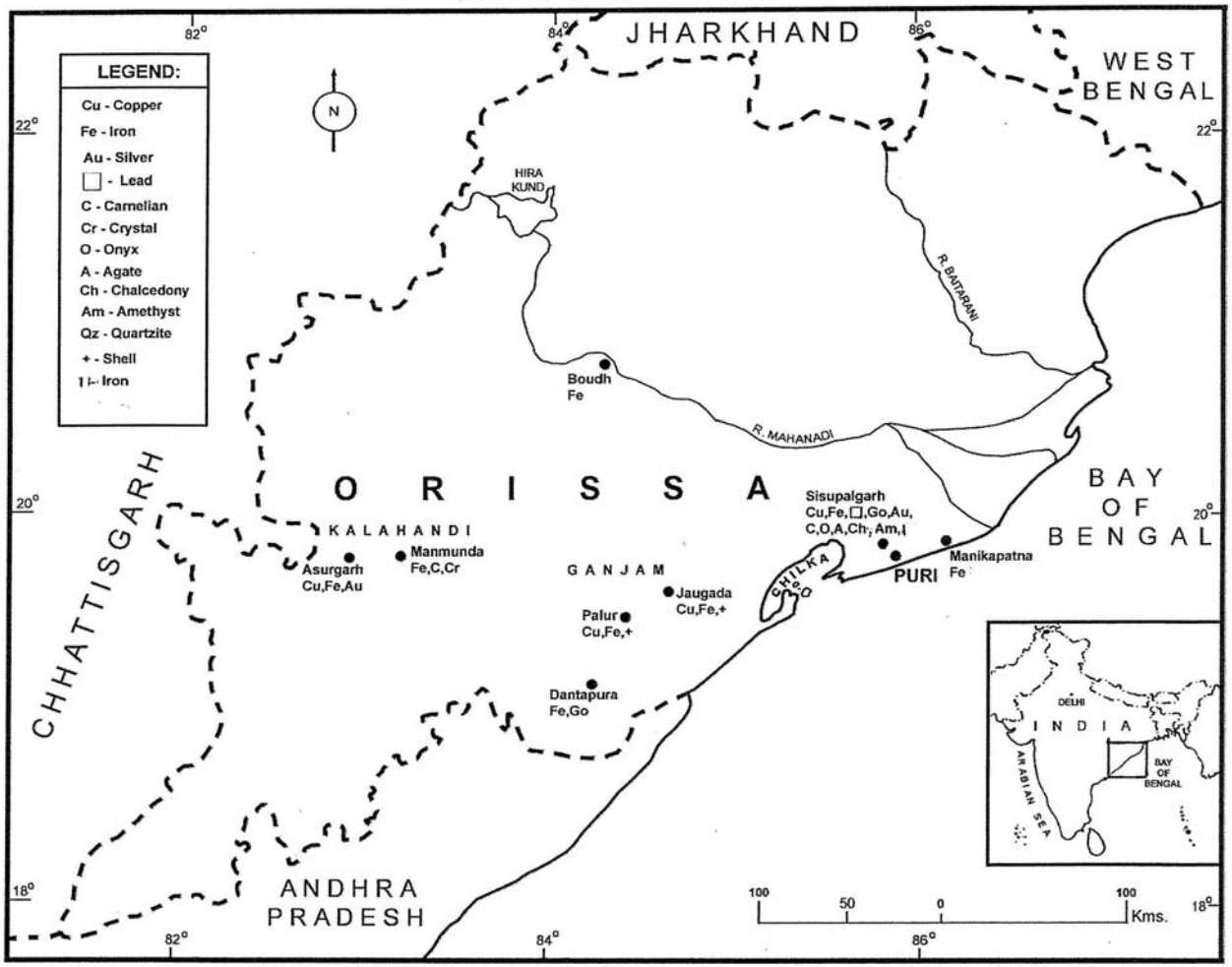
Raw Materials	*Jaugada*	*Asurgarh*	*Manamunda*	*Palur*	*Dantapura*	*Boudh*	*Sisupalgarh*	*Radhanagar*
Copper/ Bronze	objects, coins	coin		copper fragments			coins	bangles,coins, beads
Lead							coin, ear ornament	
Iron	objects	axes,door hinges,hooks	nails,plates, hinges,arrow-heads,spear-heads dagger, knives	slags	slags	slag	nail,spike,chisel, hook fragment,sickle, latch, ring, knife, arrowhead,spearhead, shallow dish, caltrop, bracelet, ring of tripod, frrule, fishooks, borer, lances, staples, dagger, harpoon	harpoon, spearheads, fishooks, beads
Gold					coins		coin	
Silver		coins					coin	
Semi-Precious stone	unspecified beads	unspecified beads	Carnelian, Crystal beads				Carnelian, Onyx, Agate, Chalcedony, Amethyst beads	
Shell	beads			conch shells				
Ordinary stone								Quartzite beads
Ivory							bangles	

Chart 11a (continued)

	Raw Materials	*Manikapatna*	*Komna*
	Iron	harpoon, spearhead, fishhooks,	
	Semi-precious stone	unspecified beads	
	Soapstone		plate

MAP-11

SITEWISE DISTRIBUTION OF RAW MATERIALS IN ORISSA
c. 200 BC - 300 AD



Sitewise Distribution Of Manufactured Objects

Chart 11a shows the different raw materials used in the region. They are copper, iron, lead, gold, silver, agate, onyx, carnelian, amethyst, chalcedony, quartzite, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Bead Manufacture: An interesting mould for preparation of beads and ornaments was found along with a ground stone tool at Asurgarh in Kalahandi district (IAR 1972-73: 27).

Iron: From the surface a large number of iron slags, fragments and ore nodules were recovered from Manamunda and Asurgarh sites in Central Orissa (Tripathi and Joglekar 1997-98: 119). Deuli also yielded a large number of slag pieces, nodules and iron objects (Tripathi and Joglekar 1997-98: 119).

Slag: Slag and copper fragments have been found at Palur in Ganjam district and Boudh related to the post-Mauryan period (Tripathi and Mohanty 1997-98: 86).

Character of Sites and Distribution of Manufactured Objects

The most well known urban centers of the region are Sisupalgarh and Jaugada that are identified with Mauryan Tosali and Kharavela's Kalinganagara. The excavations reveal a cultural sequence from the third century B.C. till the middle of fourth century A.D (Lal 1949: 67). Rouletted ware and Puri-Kushana coins were found at Sisupalgarh (Lal 1949: 77; Puri 1966: 102; IAR 1970-71: 30). Terracotta ring wells with a stone paving at the mouth assigned to 200 BC-100 A.D. were found. The subsequent period exposed the plans of two adjoining houses built of laterite blocks. A massive clay rampart was also found at the site. In the early centuries AD two brick walls with a gap was found on top of the earlier defense wall (Chakrabarti 1997: 241).Kushana coins, each of Kanishka and Huviska, Roman pottery and clay bullae were found at Sisupalgarh. A gold coin pendant discovered here had Brahmi and Roman legends on both sides (Kameshwar Prasad. 1984: 65). Jaugada is identified with ancient Samapa where the remains of a fortified town have been revealed. A wall of rubble and stone chips with a layer of large boulders is revealed in excavations. The chronology is tentatively fixed from the third century BC to fourth century A.D. (Chakrabarti 1997: 240). Puri-Kushana coins were found here (IAR 1956-57: 31).

Dhauli, the site of the Ashokan minor rock edict, revealed traces of earthern fortification (Chakrabarti 1998: 107). The second period here produced sherds of typical Hellenistic types of ceramic, bowls with central omphalos. Houses of brick are reported from this period (Allchin and Erdosy 1995:146).

The resource-use is starkly different at the two urban sites. We find copper coins and artifacts at Jaugada as also unspecified objects of iron. The variety and number of iron artifacts is impressive at Sisupalgarh. The objects are mostly tools and implements such as nails, arrowheads, spearheads, knife, ladle, chisel, fishhooks, borer, lance and so on. A coin of gold and silver has been found at Sisupalgarh. The varieties of beads of semi-precious stones are wide in variety at Sisupalgarh. The raw materials used are agate, carnelian, amethyst, onyx and chalcedony. While shell beads are found at Jaugada, Sisupalgarh has not yielded any object of shell. However, ivory bangles and styli are found at Sisupalgarh. A more detailed report of artifactual finds from Jaugada is wanting.

Some of the explored sites in this region are described below. Early historic cultural materials dating back to third century B.C. to first century A.D. were unearthed from Manamunda and Asurgarh sites in Boudh district (Tripathy 2000:401). Nehena in the Kalahandi district revealed traces of megalithic culture. The site was known as *navanaka* during the early historical period (ed. Basa and Mohanty 2000: 421). The other small sites in the region are Palur, Bantia and Boudh. Manikapatna is an ancient seaport of Orissa located in the Puri district. Rouletted ware and Roman amphorae was discovered here. The site was in occupation from the first century onwards (Pradhan, Mohanty and Mishra 1995-96: 120-1). Excavations revealed a habitation site in the periphery at Manikapatna. Numerous potsherds and ringwells were also found at the site. Period I of the site is assigned from the second to the fifth-sixth centuries A.D. (ed. Basa and Mohanty 2000: 480). Komna is an important early historic site in the region. It revealed a soapstone plate depicting Lord Buddha in meditation (ed. Basa and Mohanty 2000: 424). Palur is a seaport in the Ganjam district. Slag and copper fragments as well as other artifacts such as conch shells have been found here related to the post-Mauryan period (Tripathi and Mohanty 1997-98: 86).

The finds as well as resource-use at the small sites in the region is limited. Copper is mostly found in form of coins. Iron artifacts are mostly at Manamunda and

Manikapatna. These are nails, plates, hinges, arrowheads, spearheads, harpoon and daggers. Asurgarh has yielded silver coins.

Radhanagar is an early historic city in coastal Orissa with ruins of a large number of Buddhist settlements (Mishra 2000: 507). The site is a fortified settlement of this period. A large number of pottery, brick structures, terracotta ringwells and other habitational debris were found in excavations (ed. Basa and Mohanty 2000: 510). Excavations at Lalitagiri and Udayagiri have revealed the existence of a flourishing Buddhist centre which was perhaps the earliest in the region (Bandopadhyay 2007: 1). Buddhism was popular during the Kushana period and is reflected at the site of Lalitagiri. Excavations show that the site was in continued occupation by the Buddhists from the early Christian centuries. The find of Puri-Kushana coins and Andhra-ceramics contemporary with the Andhra-Satavahana period indicate that the site had early beginnings. The stupa revealed relics of Buddha and one of his disciples. The remains of an apsidal temple were found here. Also, an apsidal entrance pathway from the earlier stupa continued throughout the subsequent periods. A stone platform with inscriptions in Kushana-Brahmi, a bas relief of second-third century A.D. was also found. (Donaldson 2001:53-4). Bandopadhyay (2007: 10) and Patnaik (1993: 50) have observed that this indicates that the place remained a great centre of Buddhism in the early Christian centuries. As observed by Chakrabarti (1998: 110), along with the Brahmi inscriptions of Kushana character from Lalitagiri, similarity in the linticular sockets to insert bas-reliefs is noticed similar to the ones reported from Sanchi, Bharhut, Sarnath and Bodhgaya. Udaygiri and Khandagiri provided the earliest evidence of systematically organized rock-cut monuments of the region. Though the bulk of the evidence comes from the post-Gupta period, excavations have exposed caves dedicated to the Jain monks during the rule of Kharavela of the Mahameghvahana dynasty (Sahu 2000: 432). Other remains were apsidal *chaitya-grihas*, a relic container dated first century A.D. and sculptures. Pottery dating from the early Christian era to medieval period has also been found at Udayagiri. (IAR 2001-02: 142).

Other sites that revealed Buddhist remains were in Balasore, Mayurbhanj, Jajpur, Jagatisinghpur, Cuttack, Khurda, Puri and Phulbani districts (Bandopadhyay 2007: 10). In

fact, Donaldson (2001) lists the Buddhist sites district-wise that span all the above mentioned districts of the Orissa region. Most of them yielded sculptures dated to the post fifth century A.D. although some contain earlier materal as well. Langudi in the Cuttack district revealed a unique rock-cut Buddhist monastery, thirty four rock-cut stupas along with Sunga-Kushana terracotta of second-third centuries A.D. (Basa and Mohanty 2000: 527-8; Donaldson 2001:27). Dantapura, the capital of ancient Kalinga is possibly identified with Paloura in the Ganjam district. This was possibly the site of Paloura mentioned by Ptolemy. The site revealed stupas, mud rampart; two brick built stupas and exposed a number of Puri-Kushana coins as well as Kushana gold coins of first-second century A.D. (ed. Basa and Mohanty 2000: 528, 656; Chakrabarti 2005: 55).

Several sites associated with Buddhism in Orissa have been listed by Chauley in an unpublished paper cited by D.K. Chakrabarti. These are, Jayarampur, Khadipada, Mohanpara, Solampur, Bhuinpara, and Kesba in Balasore district; Khiching, Ranibandh and Udala in Mayurbhanj district; Kolangiri, Rameshwar, Virajagiri, Kharla, Chandwa, Bhaneshwarnasi and Kudeshwar in Cuttack district; Bhuvaneshwar, Kuruma, Achyutrajpur and Aragarh hill in Puri, Phulbani and Sambalpur districts (Chakrabarti 1998: 110-11).

Raw Materials Available Within The Sub-Region

Gold

Keonjhar district: Gold washing was practiced in the past near a small tributary of Hammantia nala (Ziauddin and Narainswami 1974: 142).

Mayurbhanj district: Five square kilometer of alluvium was found to be highly auriferous at the Sapgora and Borai rivers near Kudersai (Ziauddin and Narainswami 1974: 144).

Sambalpur district: Gold is reported from sand and gravel beds of Mahanadi river (Ziauddin and Narainswami 1974: 144).

Lead

This is available in the Sambalpur district at Talpuchia. Here small rolled pebbles consisting of mixture of the oxides and carbonates of lead were found on the surface (Ball 1881: 295).

Copper

Deposits of copper are found in Kesharpur in the Mayurbhanj and Sambalpur districts.These are offshoots of the Singhbhum copper belt and occurs in the Rumapahari granite in the north-south direction (Wadia 1966: 128).

Iron

The earliest reference to manufacture of iron is reported by one Captain Hamilton who states that iron was plentiful at Balasore. The most abundant source of iron ore is at Kodaloi in the Sambalpur district (Ball 1881: 362, 382). It is also known to occur in Gorumahisani, Badam and Sulaipat hills of Mayurbhanj district (Behuria 1990: 70).

Quartzite

Good quality quartzite is available in Dadhikhal and Balangir in Mayurbhanj and Kendujhar regions (Behuria 1990: 76).

Shell

This was available from the coast of the region.

Ivory

Elephants are found in the dry deciduous, moist deciduous and semi-evergreeen forests of the Eastern Ghats in Orissa (Sukumar 1993: 15). The elaborate depiction of the elephant in the Udayagiri and Khandagiri caves indicates their undoubted presence in the region (Sukumar 2011: 108).

Raw Materials Available Outside The Sub-Region

CHOTANAGPUR PLATEAU

Semi-Precious stones:

Varieties of semi-precious stones such as agate, chalcedony, onyx, jaspers have been noted on p.76..

Epigraphic, Numismatic and Literary Linkage

It is observed by B.N.Puri (1965:51) that though the south-east expansion of the Kushana empire is difficult to establish, nevertheless the find of Kushana and Puri-Kusana coins (imitation of the Kushana coins) in the Orissa region was not

completely out of context. These coins were possibly issued by the Kushana-Murunda tribes who were the lords of south Bihar. These coins have been found on the northern slope of Rakha hills in the neighbourhood of the ancient copper workings in Singhbhum district (Roy Choudhury 1958: 66; Chakrabarti 1993:205). The occurrence of this coinage from Singhbhum to Ganjam possibly indicates the influence in the region. Also, as observed by Patnaik (1993: 49) a possible trade network from the middle Gangetic Plains to South Kosala passing through regions of Sambalpur and Kalahandi is indicated by the circulation of these coins. It would not be improbable for resources to flow from Chotanagpur Plateau to the Orissa region given the vigorous trade activity in this period.

However, the Puri-Kushana coins were in circulation in the post-Kushana phase. It might be highlighted that the affinity between the middle Gangetic plains with the Orissa region can be traced from the Mauryan period. The presence of NBPW pottery at Sonepur (Bolangir district) and Sisupalgarh have been noted by Lahiri (1992: 323). Also the Ashokan edicts at Jaugada and Dhauli and Mauryan silver punch marked coins at Asurgarh demonstrate the political control of the Maryan Empire over the region (Lahiri 1992: 323). The above references certainly indicate that the middle Gangetic plains had definite connections with Orissa throughout the early historical period. This would have facilitated procurement of raw materials from the Chotanagpur Plateau as well as the plains.

Orissa in the post-Mauryan period had different types of settlements. We find urban sites such as Sisupalgarh, Dhauli, Manikapatna as well as Buddhist settlements as Lalitgiri and Uadaygiri and Radhanagar. Manufacturing activity was, however, noted at small sites such as Manamunda and Asurgarh in the Kalahandi district. Sites such as Boudh, Sisupalgarh and Manamunda yielded substantial artifacts in excavations. The resources used in the manufacture of artifacts were mostly obtained from within. These were gold, lead, iron, quartzite, shell, bone and ivory. The region was also dependent on the resources found in the adjoining regions such as Chotanagpur plateau. Copper resources of Chotanagpur territory were obtained and a few semi-precious stones such as agate, carnelian and onyx were possibly procured from the Chotanagpur plateau.

CHAPTER 3

EARLY INDIA FROM CENTRAL INDIA TILL KERALA c.200 B.C.—300 AD

Central India

This region comprises the Malwa plateau lying in the heart of India, the Bundelkhand region bounded by the Yamuna in the north and the Vindhyachal- Baghelkhand region located in the central part of the alluvial stretch of great plains and the Deccan and the Peninsular foreland (Singh 1971: 565, 597,623). The province is dotted with several historical sites. Some of the noted ones are Besnagar, Ujjain, Kayatha and Malhar. Besnagar or ancient Vidisa, served as the capital for some of the important ruling dynasties such as the Sungas and later rulers (Chakrabarti 1997:221). Similarly, Ujjain was an important city among the solasa mahajanapada at the time of the Buddha. The post-Mauryan levels are well represented in some of the sites in this region. Some of these sites are, Kayatha in Ujjain district (Ansari and Dhavalikar 1975), Ujjain (Puri 1966) and Eran in Sagar District (Puri 1966), Tripuri in Jabalpur District (Sharma and Mishra 2003), Besnagar (Sharma and Mishra 2003 and Avra in Mandasor District.

Sitewise Distribution Of Manufactured Objects

Chart 12a shows the raw materials used in the region. These are copper, iron, lead, gold, silver, quartz, carnelian, agate, chalcedony, jasper, crystal, jade, saphire, opal, basalt, sandstone, marble, steatite, soapstone, shell, and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Shells: Several pieces of cut shells and other prepared objects found in proto-historic layers at Maheshwar show that this was a local industry of considerable antiquity (Sankalia, Subbarao and Deo 1952-53:227).

Semi-Precious stones: A large number of beads of agate and chalcedony in a lidded pot were found associated with sandstone grinding slabs from the mud floor of a house of Period III at Ujjain. These were marked by deep and long grooves. Several long and deep channel furnaces evidently for heating the beads were also found.

Chart 12a

Central India—c. 200 B.C.—300 A.D.

Raw Materials	*Awra*	*Kayatha*	*Sirsa*	*Ujjain*	*Gondarmau*	*Eran*	*Besnagar*	*Tripuri*
Copper/Bronze	coins	spouted cup,bowls, bangle,anti-mony rods	coins	coins		coins, objects part of sword	coins, bell	coins antimony rods
Iron	spear-heads, nails, looped hooks, sickle, chisel, lamp	spearheads, arrowhead, knife-blade, ladle,rod		arrowheads, spearheads, knives,blades, nails,hooks, scissors,slag		objects beads, bangles	objects	arrowheads
Lead								coins
Gold			necklace				coins	
Silver					coins	coins	coins	coins
Semi-Precious stone		Quartz,Carne-lian drop pendant		unfinished Agate beads, Chalcedony beads,Jasper, Crystal ear ornament		Crystal beads		Jasper beads earring
Ordinary Stone		Basalt quern,Sand-stone figure		Sandstone grinding slabs			Marble objects, pestle, querns	grinding stones, vessels
Steatite/Soap stone		Soapstone lid, spool						Steatite objects, Soapstone ring
Shell/Conch		bead, bangles		bangles		bangles, beads	bangles	bangles
Ivory	sealing	bangle fragment, carved bottle		hairpins, combs				

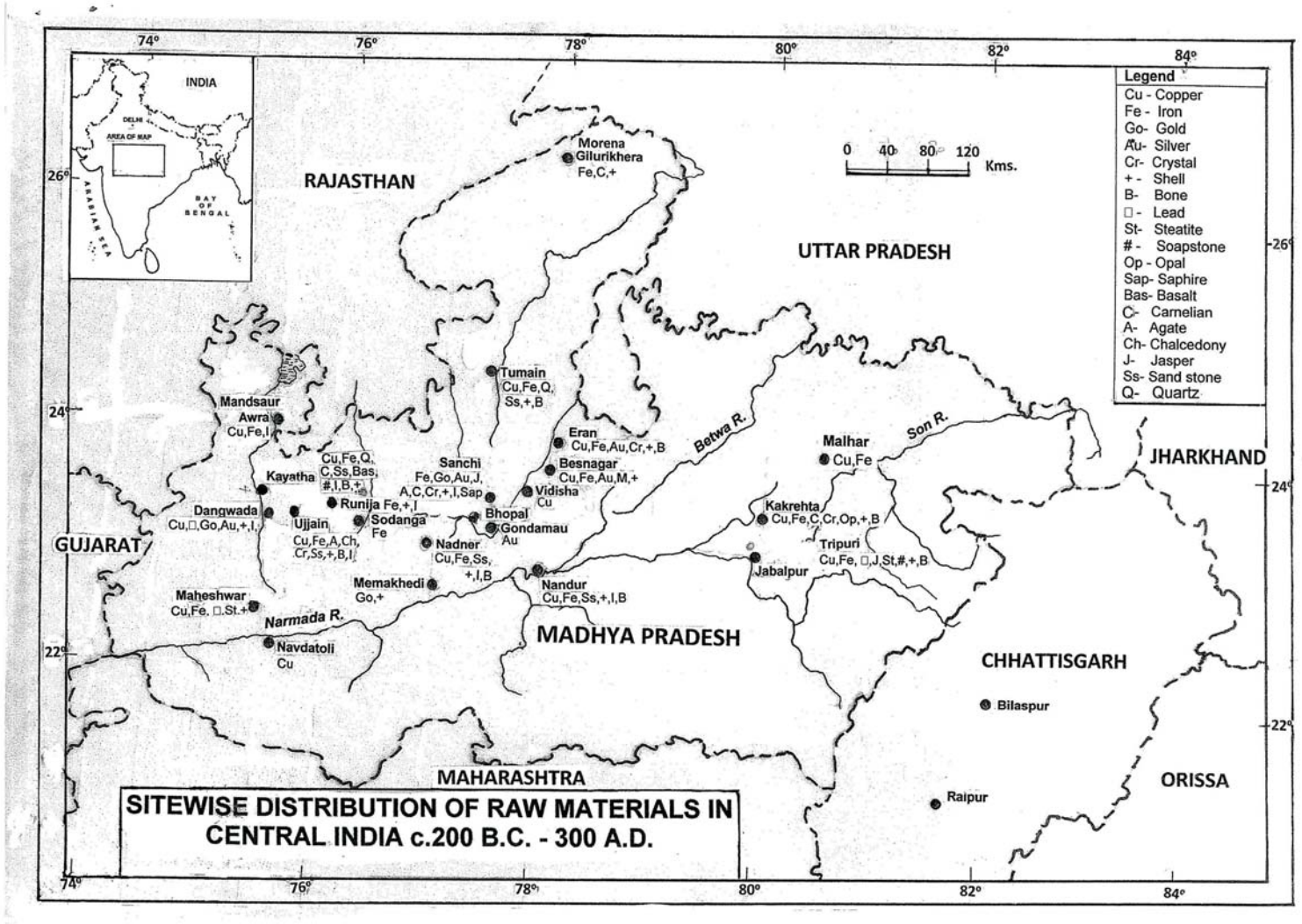
Chart 12a (continued)

Raw Materials	*Vidisha*	*Tumain*	*Malhar*	*Dangwada*	*Memakhedi*	*Pagara*	*Nandur*	*Runija*
Copper/Bronze	coins	beads,bells	coin,antimony rod	bell,votive capital			coins, beads	
Iron		arrowheads, spearheads, nails,blades, sickles,axe, hooks	nails,spear-heads,arrow-heads				objects, nails, arrowheads	objects
Lead				ear lobe				
Gold				leaf	Roman coin			
Silver				coated bangles		coins		
Semi-Precious stone		Quartz ear studs	beads					unspecified beads
Ordinary Stone							quern, Sandstone querns, caskets	
Steatite/Soapstone		Soapstone miniature pots						
Shell		bangles,dice		bowl	bangles		bangles,knife handle	bangles
Ivory				objects			bangle	bangles

Chart 12a (continued)

Raw Materials	*Gilauri- Khera*	*Sarangpur*	*Maheshwar*	*Sodanga*	*Sanchi*	*Kakrehta*	*Navdatoli*
Copper/Bronze			needle,hook, dish,bowl, blade,ring, bell,bead			beads, bangle, antimony rod, gamesmen,bell, earring finger-ring, wire,nail, needle	rod, wire
Iron	miniature vessel, spearheads,arrowheads, ring,hook, clamp,ore	objects	arrowheads, spearheads, nails,chisel trowel,knife rods, sickles	objects	nails,clamps, arrowheads	knife,tawa,tong,nail, chisel,handle, sheet nail,lump,hook	
Lead		coils					
Gold					medallion		
Silver		coins			coins		
Semi-Precious stone	Carnelian bead				uncut Agate, Carnelian, , bangles Crystal beads	Carnelian, Crystal beads, pendants, Opal beads	
Jade					strainer		
Sapphire					objects		
Ordinary Stone	ball,plaque ,slab		balls		seal	unspecified bangle,ball,disc,muller, quern,ringstone,casket, sharpner	
Steatite			lids				
Shell	bangles		bangles,rings dagger hilt,lid		objects	bangle,bead,pendant	
Ivory					bangle		

MAP-12


INDIA
DELHI
AREA OF MAP
ARABIAN SEA
BAY OF BENGAL
74°
76°
78°
80°
82°
84°
26°
24°
22°
0 40 80 120 Kms.
Legend
Cu - Copper
Fe - Iron
Go- Gold
Au- Silver
Cr- Crystal
+ - Shell
B- Bone
□ - Lead
St- Steatite
- Soapstone
Op - Opal
Sap- Saphire
Bas- Basalt
C- Carnelian
A- Agate
Ch- Chalcedony
J- Jasper
Ss- Sand stone
Q- Quartz
RAJASTHAN
UTTAR PRADESH
JHARKHAND
GUJARAT
MADHYA PRADESH
CHHATTISGARH
MAHARASHTRA
ORISSA
Morena
Gilurikhera
Fe,C,+
Tumain
Cu,Fe,Q,
Ss,+,B
Mandsaur
Awra
Cu,Fe,I
Eran
Cu,Fe,Au,Cr,+,B
Besnagar
Cu,Fe,Au,M,+
Vidisha
Cu
Sanchi
Fe,Go,Au,J,
A,C,Cr,+,I,Sap
Cu,Fe,Q,
C,Ss,Bas,
#,I,B,+
Kayatha
Runija Fe,+,I
Sodanga
Fe
Bhopal
Gondamau
Au
Dangwada
Cu,□,Go,Au,+,I,
Ujjain
Cu,Fe,A,Ch,
Cr,Ss,+,B,I
Nadner
Cu,Fe,Ss,
+,I,B
Memakhedi
Go,+
Nandur
Cu,Fe,Ss,+,I,B
Maheshwar
Cu,Fe, □,St,+
Narmada R.
Navdatoli
Cu
Betwa R.
Son R.
Malhar
Cu,Fe
Kakrehta
Cu,Fe,C,Cr,Op,+,B
Tripuri
Cu,Fe, □,J,St,#,+,B
Jabalpur
Bilaspur
Raipur
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
CENTRAL INDIA c.200 B.C. - 300 A.D.

According to the author of The Periplus, Ujjaini (called Ozene) was an emporium from where semi-precious stones were exported to the west, via Broach on the Narmada estuary (IAR 1957-58:34).

Copper and Iron: Deposits of the post c.200 BC period at Ujjain yielded a large number of pointed crucibles having a vitriolic surface along with contraptions for blowing air into them. Some of them also contained copper and lead pointing to workings in these metals during the period. Iron slag and lumps of iron are found in the form of limonite. Finished iron objects are also found in the deposits. All this indicates a flourishing industry in metals (IAR 1957-58:34, 36).

Character of Sites and Distribution of Manufactured Objects

Some of the urban sites in the Central India are Kayatha in Ujjain district (Ansari and Dhavalikar 1975), Maheshwar in Nimar district, Eran in Sagar district (Puri 1966:19), Ujjain in Ujjain district (Puri 1966:118), Besnagar in Vidisha district (Sharma and Mishra 2003: 91), Tumain in Guna district, Tripuri (Sharma and Mishra 2003: 160), Kakrehta in Jabalpur district (Sharma, Mishra 1992:1-2), and Malhar in Bilaspur district and Nandur in Raisen district. Kakrehta is an urban site whose antiquity goes back to the mesolithic times. Nothing is known till the Mauryan times after which the cultural materials revealed a flourishing post-NBPW settlement (Sharma, Mishra 1992:1-2). In this phase, the frequency of artifacts seems to have decreased (Sharma and Mishra 2003: 112). Kayatha revealed a structure of many rooms with bathroom (IAR 1967-68:25). The period between the second century BC and sixth century A.D., is characterized by a number of structural remains were found. It continued to be occupied in the post-Gupta period and later (Sharma and Mishra 2003: 118).

Excavations at Eran revealed four periods of occupation ranging from the chalcolithic age to about sixteenth seventeenth centuries A.D. The third period of occupation, covering the first four–five centuries of the Christian era, is the most important with emergence of red ware associated with Roman ceramics. Structural remains of houses built of kiln burnt bricks along with artifacts of different materials were found (Puri 1966:19). A clay mould of coins of Western Kshtrapa rulers was found at Eran (Sharma and Mishra 2003: 105). Ujjain was the capital of king Pradyota of Avanti one of the solasa mahajanapada. It was also famous as a center of learning. The author

of the Periplus notes the importance of the city of Ozene as a commercial link with the ports on the western coast (Puri 1966:118). Ptolemy tells us that Ozene (Ujjayini) at his time was capital of Tiastanes which transliterates to Chastana of the Western Kshtrapa dynasty (McCrindle 1885, reprint 2000: 155). Ujjayini's splendour and affluence are reflected in Kalidasa's writings too (Rajan 1989: 78). Excavations revealed that terracotta ringwells were popular in Period III dated c.200 BC to early Christian centuries. A terracotta coin mould was found from this stratum with effigy of Roman Emperor Augustus Hadrianus (IAR 1957-58: 36).Besnagar or ancient Vidisha was an important urban center of the past. It was the capital of the Sungas under king Pushyamitra and Agnimitra (Chakrabarti 1997:221). Vidisa during the Sunga rule became the capital of Akara or Eastern Malwa (Tripathi 2001: 119). Besnagar is famous for the pillar of Heliodorous where the remains of a huge temple were found. The cuttings revealed occupational deposits of Sunga period to Kshtrapa-Gupta period (Sharma and Mishra 2003: 91).

Some of the other excavated urban sites in this region are Nandur, Tumain (ancient Tumbavana), Tripuri and Maheshwar. Maheshwar has been identified as ancient Mahismati according to early Buddhist literature (Sankalia, Subbarao and Deo 1958: 4). It was supposed to be the capital of south Avanti- a city founded in the sixth century B.C. The excavations revealed human occupation here from the prehistoric to the late medieval times. Remains of houses of kiln burnt bricks speak of good town planning and standard of living (Puri 1966: 72).

The early historical period at Maheswar is associated with Kshatrapa and late Satavahana levels. The red ware pottery was mostly of sprinkler shape (Sharma and Mishra 2003: 129). Ninnore in the Sehore district revealed in excavations the stone gravel foundation of an elliptical temple, pottery of red slipped ware and other artifacts of the Sunga-Satavahana period (c. 2^{nd} BC-2^{nd} A.D.) (Sharma and Mishra 2003: 194). Malhar in the Dakshin Kosala region has revealed a massive fortified site of the early historical period alongwith house remains of burnt bricks. Satavahana coins were also recovered from here (Chakrabarti 2005: 50).

The pattern of resource-use in the urban areas is varied. Copper and iron were extensively used. Copper has been used in different forms such as antimony rods,

needles, bell, bead dish, bowls, cups and bangles. Bronze has not been used at any site. Iron, on the other hand, is used only as weapons such as arrowheads, ladle, spearheads, knife, blade, rods and so on. Implements of iron such as sickle, chisel hooks, rings, clamps, nails and axe are also common. Lead coins are specifically found at Tripuri and coils at Maheshwar.

As far as the use of precious metals such as gold and silver are concerned, very few urban sites have yielded objects of these materials. Coins are the only objects made of gold and silver.

Semi-precious stones have been mostly used as beads, pendants and ear studs. The materials are mainly quartz, carnelian, jasper, opal, agate, chalcedony and crystals. These have been found in good quantity at the different urban sites. Ordinary stones such as marble and sandstone are found in the form of grinding stones, querns, pieces and caskets. Soapstone and steatite lids, rings and miniature pots are found in a few urban areas. Shell has been used as bangles and beads. Ivory is mostly used in the form of points, arrowheads, caskets, stopper and perfume bottle, amulets, kohl sticks and beads. The urban sites have revealed a variety of resource.

The small urban sites in this region are Pagara in Dhar district, Runija in Ujjain district, Gilaurikhera in Morena district, Sodanga in Ujjain district, Avra in Mandsor district, Sirsa in Durg district, Gondarmau in Bhopal district, Atud Khas in East Nimar district,Dangwada in Ujjain district (Sharma and Mishra 2003) and Kenda Zamindari near Bilaspur (Chakrabarti 2005: 52). Excavations at Atud Khas exposed rubble structures and ring wells at various locations at the site. It has several Sunga period artifacts such as terracottas and red ware pottery (Sharma and Mishra 2003: 83). At Avra in the Mandsaur district, the early historic period layers are characterized by red polished ware. Structures with brick foundation are noted at this site. The importance of Avra lies in its connection with the Roman world in this period. This is evidenced by the find of a fragment of Roman pottery and its imitation. A terracotta bull bearing the impression of a Roman coin is also found (Sharma and Mishra 2003: 87). At Dangwada, the remains of a sacrificial pit inscribed with a terracotta seal of second century BC has been revealed in excavations (Sharma and Mishra 2003: 101). Khaparkheda in Dhar district was a major settlement of the early historic period. Excavations have revealed huge settlements of mud and brick

houses. The presence of both public and private buildings indicates that a strong central authority existed in the early historical period (Sharma and Mishra 2003: 119). Nandner in Sehore district has revealed artifacts and coins of Sunga-Kushana rulers in the early historic period. Structural remains include ring wells, rammed floors, and walls (Sharma and Mishra 2003: 141-3). At Gilaurikheda, several Sunga-Kushana terracotta figurines, pottery as sprinklers, spouted vessel and knobbed lids and jars were found (Sharma and Mishra 2003: 109). At Khedinema in Harda district, the early historic period is ascribed to the Sunga phase. A large number of spouted miniature pots and sprinklers have been recovered from here besides terracotta objects (Sharma and Mishra 2003: 121). Amilkoni in the Rewa district revealed Kushana pottery, terracotta and iron objects. Also extensive brick structures were noticed along with brick floored rooms. The same structural sophistication as that of the Ganga valley sites of the Kushana period were visible here (Sharma and Mishra 2003: 176).

Other sites with remains of the post-Mauryan period are, Khalghat in Dhar district where pottery of Maurya-Sunga levels was exposed, Pagara in west of Dhar, Sabatpur in Sehore district which revealed Satavahana coins and structures; Sirpur in northeast of Raipur in the present state of Chattisgarh which revealed fine red slipped ware datable to second-third centuries A.D. (Sharma and Mishra 2003: 189, 199, 202, 213). An inscription of Saka Era (185 BC) of ruler Rudrasimha is found in Sektakhedi in Shahjapur district and is the only so far known inscription of the Western Kshtrapas in Central India (Jain 1997: 22). Ekalbara in the Dhar district revealed a Sunga-Gupta cultural period with artifacts such as stone balls, disc beads, skin rubbers and lamp, and other terracotta objects (IAR 2001-02:109).

Copper coins are noted at Awra and Sirsa while at Kenda Zamindari, Kushana coins were found. Dangwada yielded a votive capital and a bell of copper. The use of iron is mostly in the form of implements such as sickle, chisel, hooks, rings, clamps and nails. Awra revealed substantial artifactual remains. The only artifact of lead in form of ear lobe is found at Dangwada. Gold leaf and necklaces has been found at Dangwada and Sirsa respectively. Memakhedi is a small site that has yielded a Roman gold coin. We do not find Roman coins in any other site in this region. However, silver coins and coated bangles have been found at Sarangpur, Pagara, Gondarmau and Dangwada.

The use of semi-precious stones is substantially less at these small sites. Shell bangles are also limited to the sites of Gilaurikhera, Memakhedi, Runija and Dangwada. An ivory sealing was discovered at Awra. The resource-use at these small sites is very limited. Few sites in this category have shown an exhaustive use of different resources. Also, the number of artifacts at these sites is much less. These can at best be classified as small sites as suggested by the resource-use here.

The religious–urban sites in central India are the Buddhist remains in and around Bhilsa. There are five groups as described by Alexander Cunnigham (1854: 7) Sanchi in the Raisen district is the most well known of these Buddhist remains located southwest of Bhilsa. The other stupas (stupa) as referred by Cunnigham are Sonari south west of Sanchi, Satdhara lying west of Sanchi, Bhojpur south-southeast of Bhilsa and Andher lying east-southeast of Bhilsa (Cunnigham 1854: 7). Sanchi was possibly referred to as Chetiyagiri in Mahavamsa; the Buddhist chronicle of Ceylon (Marshall 1955: 8).A large monastic complex was unearthed here with imposing gateways. The Andhra rulers who ruled in east Malwa before the Christian era are credited with the splendid structures of the four gateways of the great Stupa. Kalidasa's *Malavikagnimitram* states that Pushyamitra's son Agnimitra was ruling over western region with Vidisa as capital. According to Marshall, the most important monuments at Sanchi belong to the period of the supremacy of the Sunga rulers (Marshall 1955: 10-11). Only four sculptures of Kushana style from Mathura are known from Sanchi (Marshall 1955: 12-3, 16). The stupas at Sonari located in the neighbourhood of Bhilsa were of small dimensions. Some of the remains were just circular foundations and some of them are ruins (Cunnigham 1854: 319). The Satdhara stupas are situated on the left bank of Besali River. The stupa at Satdhara has one large stupa comaparable to the Sanchi stupa presently lying as a mound of bricks. The terrace and the dome are well above the ground. The stupa was crowned by a Buddhist railing circular in shape and several such pillars can be seen lying around it Around one of the stupas at Satdhara were found mass of buildings which were probably temples. They are locally known as *Siddh ka makan*. At another stupa at Satdhara two steatite caskets with inscriptions were found in excavations (Cunnigham 1854: 321-23). At Bhojpur, another group of stupas were unearthed. The stupa was of cylindrical plinth and built of dry stones without any mortar or mud. A relic chamber was

discovered here made of crystal in complete form. It had a terrace, plinth, hemispherical dome, pedestal and pinnacle. The discovery of seven precious things was madein this relic chamber comprising round bits of gold, a garnet bead referred to as Badakshani ruby by Cunnigham, crystal bead greenish crystal beads and minute fragments of pearl (Cunnigham 1854: 330-332).

The group of stupas at Andher was decorated with pillars ornamented with full and half medallions, some of them carrying inscriptions (Cunnigham 1854: 344). Tripuri revealed remains of Buddhist viharas, circular soakpits, terracotta figurines of Kushana affinities and stamped pottery and coins of Satavahana rulers (Sharma and Mishra 2003: 160). According to James Fergusson (2007:71) the age of this group of stupas can be dated between c.250 BC to first century A.D. Nandur, a site in the Raisen district has two Buddhist stupa monastery remians of first-second centuries BC at Birdpur and Patandeo and Sunga period sculptures. Period V at the site of Nandur yielded coins of Satavahana king Sri Satakarni c. 200 BC- 200 A.D. (Chakrabarti 2005: 98-99).

The noteworthy resources used at Sanchi are gold and silver in form of medallions and coins respectively. Amongst the use of different semi-precious stones, a jade strainer and sapphire object of the period are the most prominent (ARASI 1936-37:85). These have not been used at any other site. It is also noted that copper has not been used at Sanchi in any form. The exclusive use of a few resources such as jade and sapphire is significant. As a religious-urban site the material abundance is clearly noted in the use of varied resources in different forms.

Raw Materials Available Within The Sub-Region

The presence of marble has already been noted. (p.87)

Gold

Traces of gold along the argentiferous galena occur at Sleemanabad at Jabalpur district (I.G.I. Central Provinces 1908:202). Gold also occurs as placer metal in the auriferous sands and gravels of a large number of rivers that pass over auriferous rocks. The rivers of Punjab, Madhya Pradesh, Maharashtra and Bihar yielded gold from the past to the recent times (Biswas 1996: 327). Gold is also washed in Banjar river in the Mandala district (Ziauddin and Narayanswami 1974: 139).

Copper

Copper ore is found in the different districts in the Central Provinces and the occurrences were reported and documented by Valentine Ball in the 19th century. These are Chicholi in Raipur district, Sleemanabad in Jabalpur district, Narsinghapur at Birmanghat and so on. Chanda near Thana Wasa has ancient copper mines (Ball 1881:257). Shahgarh district in Bundelkhand has a copper deposit that was formerly worked to a considerable extent (Ball 1881: 258).

Lead and Silver

Joga in Hoshangabad district used to have some old mines situated near the Narmada which were known locally as the 'Chandi Khadan'or silver mines. This deposit extended to a distance of half a mile and a width of fifteen feet. Silver exists in the galena according to Mr. Mallet to the extent of twenty-one ounces to a ton of lead. These resources were documented in the 19th century (Ball 1881: 297).

Iron

Hematite ore is worked in the mines of Dubwara, Agaria and Janti in Balaghat and Jabalpur district. Native furnaces are found at Rewa district. Bijawar in central India has important deposits in Gwalior which contain rich iron ore. Shafts about thirty-forty deep were used to work the Mangor mines (Ball 1881:393).

Semi-precious stones

Forms of chalcedonic silica including common opal known by the general name of agate are found in the streams of Deccan Trap in Central India and are abundant in the bed of Narmada River (Wadia 1966: 160). Also crystalline quartz variety like Amethyst is found in the Deccan trap lava near Jabalpur (Wadia 1966: 161)

Sandstone

Mirzapur, Chunar and elsewhere in Uttar Pradesh have been worked for ages. The most important quarries in India are those in Upper Bhanders to the south of Bharatpur (Brown 1936: 159).

Steatite

The occurrence of beds of talcose schists and steatite north of Narmada adjacent to the marble rocks are recorded by Medlicott in 1860 in Memoirs of G.S.I. Vol 2, 1860.Its

presence has been recorded at Lalpur, Dundara, Gawri, Bhoraghat, Rithori, Khamaria, Manhera and Uchera (*Imperial Gazt. of India*: Central Provinces 1908: 23)

Raw Materials Available Outside The Sub-Region

The presence of Jade from Turkestan has been noted on p.31.

AFGHANISTAN

Sapphire

The deposits of ruby and sapphire are reported from Jagdelak and Gandamak mines located southeast of Kabul in the Shorbi district. The ruby crystals are found embedded in a host of white dolomite granular limestone and were recrystalized as marbles containing other minerals including corundum (Bowersox and Chamberlin 1995: 104, 106).

Epigraphic, Numismatic and Literary Linkages

The Kushanas established a vast empire in the northwest and northern portion of the subcontinent. Their inscriptions are found from Afghanistan and beyond which have been noted on p.12. A critical study of the Sanchi inscriptions has been done by Upinder Singh (1996: 28). She has highlighted two inscriptions of the Kushana period dated post-first century A.D. that belong to the reign of *rajatiraja devaputra sahi* Vasaka and refer to him as Vaskusana identified as the Kushana king Vasiska (Singh 1996: 28). She notes that all the three Sanchi inscriptions mentioned above were inscribed on *bodisattatva* and Buddha images that indicate the beginning of worship of such images in this period; a practice distinctive of the Kushana period (Singh (1996:29). D.C.Sircar (1965: 150) has recorded the Sanchi Buddhist image inscription of Vasiska and Roychoudhury (1996; 421) opines that this indicates that the Kushana power possibly spread as far as Eastern Malwa. Numismatic evidence of Kushana rule is found from this region. These include issues of Wima Kadphises from Vidisha and Shahdol. Among the hoard found at Shahdol 324 issues belong to Kanishka I. Coins of Huviska and other rulers of Kushana dynasty as Vasudev and Kanishka II or III have been found from Jhajhapuri in Bilaspur district, Shahdol and Harda and Tewar. Raigarh yielded a Boddo type gold coin of Kanishka I (Sharma and Mishra 2003: 18)

The strong political presence of the Indo-Greek and the Kushan rulers in this region in the post-Mauryan period possibly made resource procurement from distant lands such as Afghanistan and Central Asia was very much likely.

Central India is a vast land with abundant resources. The Deccan trap which is known as a region rich in different kinds of resources falls within its parameters. It can be inferred that the different raw materials that were used in the sites spread throughout the given province tapped these very resources. The different raw materials were gold, copper, iron, lead, silver, marble, sandstone and steatite. Semi-precious stones such as quartz, jasper, carnelian, agate and chalcedony were procured from the resource rich Deccan trap.

The raw materials which central India was obtaining from outside were jade and sapphire from Afghanistan and Turkestan which is known for its monopoly over the resource. The vast area under the Kushana rulers in the early centuries A.D. made this procurement quite possible.

Rajasthan

The region lying on the western part of India was the center of Matsya *janapada* one of the '*Solasa Mahajanapada*' in the sixth century B.C., and of the Mauryan Empire as known from the Ashokan rock edicts near Bairat. Several artifacts as well as coins of ruling dynasties from Kshatrapas to the Guptas speak of the character of political presence exercised over it. Some of the sites surveyed are, Bairat, Rairh, Nagari, Noh, Sambhar, Rang Mahal and Balathal (Sahni 1999; Puri 1995-6: 8, 35; Bhandarkar 1998: 118-119; IAR 1965-6: 38; 1970-1: 32; Sahni 1993-4:23; Rydh 1959 and IAR 1993-4: 96).

Sitewise Distribution Of Manufactured Objects

Chart 13a shows the different raw materials used in Rajasthan. They are copper, bronze, iron, lead, gold, silver, rock crystal, carnelian, onyx, amethyst, aquamarine beryl, turquoise, chalcedony, lapis lazuli, steatite, shell and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Iron tools and implements of different types and large quantity of iron refuse were found in the excavations at Rairh. Evidence of numerous smiths and slag scattered all over the surface of ruins suggest that Rairh was a metallurgical center where industrial operations on a moderate scale were conducted (Puri 1995-96:35). A mouth piece of blacksmith's bellows and cruicibles were found at Sambhar (Sahni 1999: 66). At Noh in Bharatpur region, a well preserved smelting furnace with a large quantity of iron slag was exposed in the excavations (IAR 1970-1: 32).

Chart 13a

Rajasthan—c. 200 B.C.—300 A.D.

Raw Materials	*Rairh*	*Balathal*	*Nagari*	*Noh*	*Bairat*	*Sambhar*
Copper/Bronze	coins,Bronze ear pendants, bridle,Bronze finger-ring, antimony rods, Bronze bottles		antimony rods, rings	coins,discs, toy cart, antimony rods		coins,bell, jars,dish, fingerrings, nail extracter, spoon,earrings, reels,ribbon,awl
Iron	sword,lance, spears,daggers, knives,arrow-heads, sickels axes, adzes, needles, handles	ploughshare, lumps,points, nails,arrow-heads,blades, spear,angle, clamps,drills, adzes,bangles, rings,wire, hooks, tweezer	arrowhead, spearhead, bell, nails			daggers,sickles, chisels,cruciblea, staples,stirrups, ladle, spoon, hanging lamp, arrowhead,shakles fish-plates,rings,braces, door pivots
Lead	coins,ear studs					
Gold	beads,finger-rings, pins				casket	bead, leaf, coin hoard, amulet
Silver		coins			coins	coin
Semi-Precious stones	Rock-Crystal Carnelian, Onyx beads, Rock Crystal, beads, Amethyst beads, Turquoise beads, Aquamarine Beryl beads, Chalcedony beads	Carnelian. Jasper beads	Crystal, Agate beads	bead	ear pendants	Agate, Carnelian beads
Lapis Lazuli	beads					
Ordinary Stone	balls, querns, casting dice	saddle quern, hammerstones, mullers,pounders, rotary quems, balls	stone images			

Chart 13a (continued)

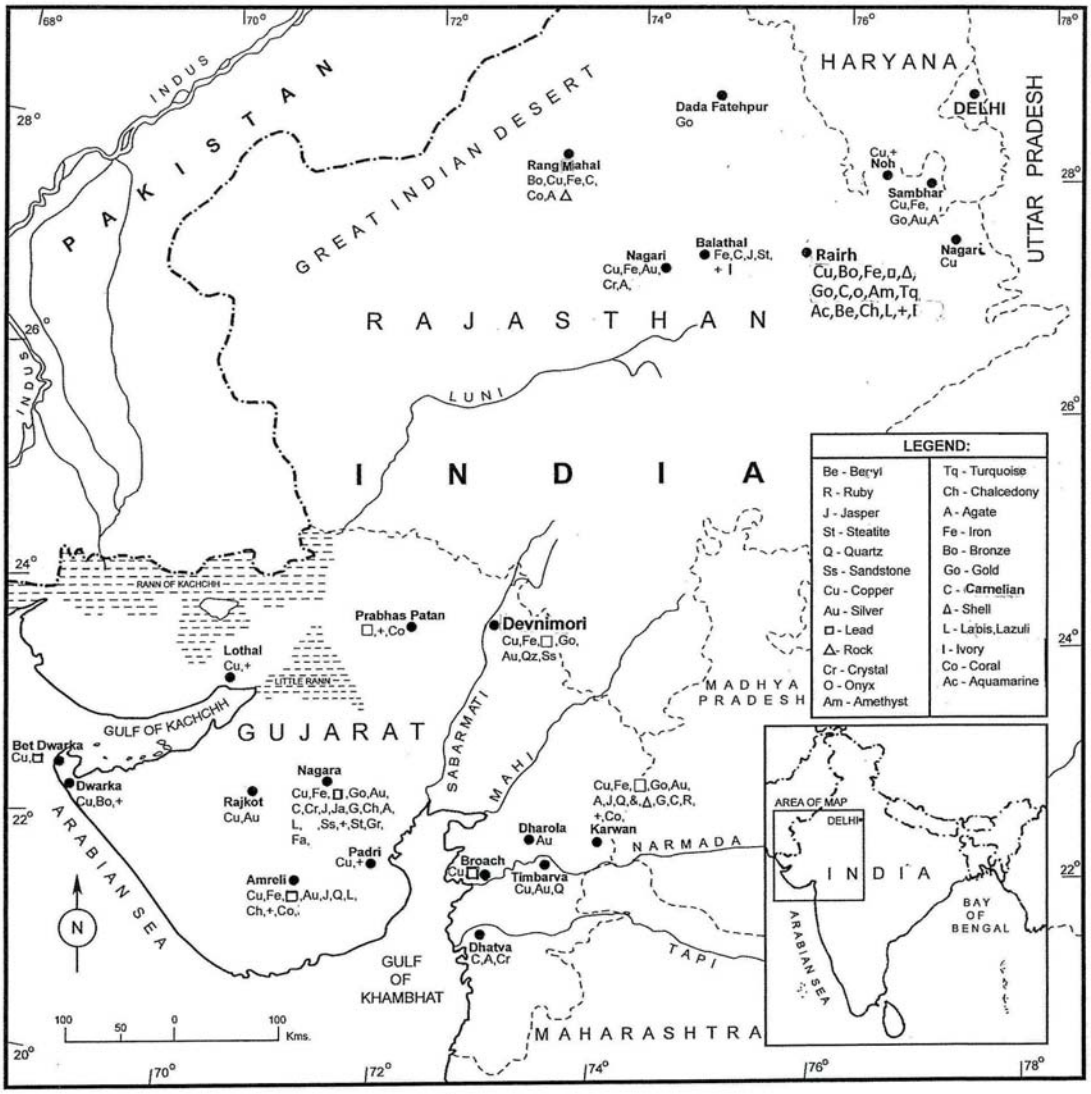
Raw Materials	*Rairh*	*Balathal*	*Nagari*	*Noh*	*Bairat*	*Sambhar*
Steatite		beads				
Shell	beads	beads, ornament		bangles		
Ivory	casting dice	ornaments				

Chart 13a (continued)

	Raw Materials	*Dada Fatehpur*	*Rang Mahal*
	Copper/Bronze	bracelet, finger ring, pin,	Bronze handle of bell, band, ring, mounting clasp , coins
	Iron		handles, sockets, ring, bowl, bell, hook, ladle, mounting, sickles, arrow-heads, spearheads
	Gold	coin hoard	
	Silver	coin hoard	
	Semi-Precious stone		Carnelian, Rock-Crystal beads, Coral, Agate beads, Amethyst, Quartz beads
	Ruby		beads
	Lapis Lazuli		beads
	Ordinary Stone		Sandstone whetstone, mullers
	Shell		bangles, beads

MAP-13

SITE -WISE DISTRIBUTION OF RAW MATERIALS IN RAJASTHAN AND GUJARAT c. 200 BC - 300 AD



Character of Sites and Distribution of Manufactured Objects

Bairat is traditionally identified with Viratapura, the capital of Virata, the king of the Matsya janapada of *Mahabharata*. Here, the Pandavas along with Draupadi passed in concealment the thirteenth year of their exile. Bairat also formed part of the Indo-Greek kingdom. It had a well-established settlement of the Mauryan and the subsequent periods of Indian history. It is also the find spots of two Ashokan edicts. A unique Buddhist temple was unearthed at the site (Sahni 1905-6:85; 1999: 23, 43). Bayana located on the Udaipur-Gwalior region was the seat of power of the Yadu chiefs prior to their subjugation by the Gupta rulers. The place was known as 'Sripatha'. The presence of the Yaudheya tribe at Bayana is known through the Allahabad pillar inscription of Samudragupta and is corroborated by the find of the Yaudheya inscription in Vijaymandirgarh (Bargoti 2003: 135). Sambhar, another urban site was a town founded about third century B.C. that continued to flourish till the tenth century (Sahni 1993-94:23). A total of forty five dwellings with central courtyards were exposed in the excavation. The levels assigned to the Kushana period contained copper coins of Huviska and coins of Yaudheyas of Kushana date. A Durga figure with a pottery tablet was also found at Sambhar (Sahni reprint1999: 26, 35 and 60). Two elephant rider type coins of Huviska are found at Sambhar and Noh near Bharatpur (Hooja 2006: 103). Nagari in Udaipur district is known as the ancient Madhyamika of the Sibi *Janapada* and was occupied from the third century B.C. Inscribed stones, moulded plaques and sculptures suggest the occupation of the site from the third century B.C. to seventh century A.D. (Sharma 1953: 154). The site contained two structures, one the Mahadeva temple dated to the pre-Christian era and the other, Hathi Bada of c.700 A.D. The shrine had walls plastered with mud (Bhandarkar 1998: 118-119). Kshtrapa coins were found here (Sharma, 1953:154). The grammarian Patanjali refers to the invasion here by the Indo-Greek king Menander (Chakrabarti 1997: 221).

Geographically, Rang Mahal in Bikaner formed the central part of the Ghaggar plain. It is an urban site at the time of late Kushana ruler Kanishka III. The analysis of pottery and coins found in the excavations were dated from c.200-600 A.D. (Rydh 1959: 179).The excavation mostly revealed dwelling houses of mud bricks. Some even had burnt brick pavements and drains (Ghosh 1990: 138). Copper coins of

Kanishka III that are dated to c.250 A.D. have also been found in excavations (Rydh 1959: 172, 179). Aurel Stein found coins of Kadphises II from old mounds that he explored at Suratgarh and Hanumangarh in north Rajasthan (Hooja 2006: 103).

In the excavations at Rairh near Jaipur were exposed two small brick houses of the second to the third century A.D. (Puri 1995-6: 8). A lead seal and coins of the Malava republic probably belonging to the Maurya-Sunga period were also found. The Malavas are known to have thrived under the Mauryas, Kushanas as well as the Guptas. Senapati coin of the Sungas was found in excavation at Rairh (Puri 1995-6:51; reprint 1998:13, 56) as well. Rairh was an important manufacturing centre. Evidences of this being a metallurgical centre were found in form of slag and implements all over the area (Puri 1995-96:35). Nagar in Tonk district was a major settlement of the Malava republic (c.2nd BC- 3rd A.D.). About six thousand copper coins were found on the surface at Nagar (Hooja 2006: 112-3). Excavations revealed the existence of rows of shops on the side of streets. The living quarters were sometimes found with courtyards (Ghosh 1990: 138). The evidences from these sites indicate their material richness.

The raw materials used extensively in the urban areas were, copper, bronze and iron. Copper has been used as coins, dish, bell, antimony rods and nail extractor. Bronze was used in the form of ornaments as ear pendants and fingerings, bells, band, mounting and clasp. Bronze bottles were quite uncommon amongst the artifacts found at Rairh. Iron was also used profusely. The finished products were mainly in the form of utility objects as needles, hooks, tweezers, hook, mounting and spoons. The other objects were mainly tools and implements. These were arrowheads, daggers, chisels, clamps, sickles and nails.

Precious metals like gold and silver were used as beads, finger rings, pins and coins respectively. A variety of semi-precious stones were used. These were crystal, carnelian, amethyst, coral, ruby, rock crystal, and agate. Besides these, stone images, shell bangles and bone points were the artifacts that were found. Lapis lazuli has been found at Rang Mahal as beads.

In the small urban areas, Dada Fatehpur in Jhunjhunu district has revealed a coin hoard of gold of Kushana period (IAR 1985-6: 106). Balathal in the Udaipur district has levels of early historical period dated to the Satavahana and Kshatrapa levels and yielded beads

and other objects (IAR 1993-94: 97; 1995-96: 70). At Gilund early historic period levels were identified with the presence of Kushana-Gupta period material (IAR 2001-02: 225).

On the whole, the variety of raw material usage was greater in the urban sites. The urban sites yielded artifacts in different raw materials from copper, bronze, lead, gold, silver and a variety of semi-precious stones. Most of these raw materials were available within the region. Resources possibly procured from outside the region were carnelian, onyx, amethyst and shells from Gujarat, and lapis lazuli from Afghanistan.

Raw Materials Available Within The Sub-Region

The presence of copper, beryl has been noted (p.30).

Silver and Lead

In Rajasthan silver was collected as argentiferous galena of lead, zinc ores of Zawar, Rajpur, Dariba and Agucha. It has been noted that "silver mostly associated with galena assays fifty grams per tones of ore (Chakrabarti 1997:116)

Iron

This has been previously mentioned on pg. 55.

Gold

Ajmer district: Old workings of gold dust are reported to occur from Sunarkuri in quartz veins and crystallized limestone (Ziauddin and Narayanswami 1974: 144).

Jodhpur district: Gold dust is known to occur in Luni river draining from Aravalli range at Raipur and Sangramgarh in Bhilwara (Ziauddin and Narayanswami 1974: 144).

Sirohi district: Traces of gold with copper ore were detected northwest of Rohira. This has also been mentioned by Pascoe (Ziauddin and Narayanswami 1974: 144).

Tin

This metal ore is available in the following districts:

Bhilwara-Udaipur district: Incidence of tin has been reported from pegmatites of Sonaina, Nathdwara, Paroli, Rajko and Devaria and Sujanpur (Babu 1994: 36).

Ajmer-Pali district: Casserite bearing pegmatites have been reported from Bandraul of Alwar district, Pipaliya and Govindgarh (Babu 1994:61).

Jalor-Siswania district: Casserite mineralization is reported from Bhadranjan in quartz veins. The quartzite casserite veins are more visible at Kotra, Khambi and Korana area (Babu 1994: 60).

Turquoise

This occurs in Toda Rai Singh in Jaipur (Erskine 1908:54).

Quartz

Occurrences of quartz occur in small quantities at Bar, Tharipur and near villages Dhal and Bas Morvi in Pali district (Sehgal 1976:130).

Jasper

Jaspers are commonly found in the Deccan Trap at Biana and Bharatpur (Mallet 1887: 72).

Agate

Occurrence of agates has been previously mentioned on p. 30.

Chalcedony and Agate are found scattered on the surface as secondary deposits associated to the Deccan Trap. Such minerals are found in a good quantity from the Bakani area in Jhalawar district (Dhoundiyal 1964: 12).

Sandstone

This has been previously mentioned above on p. 55.

Sandstones and Limestones are the most important minerals in the geological formations of the Aravallis in the district of Jodhpur (Agarwal 1979: 6).

Ruby

Gemstones such as ruby at Delwara in the Udaipur district (Krishnan 1968: 159).

Rock Crystal

Rock Crystal is found associated in pegmatites in the Ajmer and Tonk district (Krishnan 1968: 159).

Soapstone and Steatite

Steatite talc and soapstone are found at Dausa in Jaipur, Ghevaria, Chainpura and Bhagwasa in Bhilwara, Dholita, Dhawan, Kamalpura and Ghari in Sawai Madhopur, Dipura, Gorach, Padla, Bharkundi in Udaipur, Deval, Balwara, Peeth, Simlapura and Ajmera in Dungarpur and Banswara district in Rajasthan. The deposits carry the mineral in thick lenticular beds of wide extent in schists (Wadia 1966: 371-22). Mora sixteen miles northwest of the Hindon river has deposits of steatite in the Rajputana state (Ball 1881: 413).

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli (Afghanistan) has been noted (p. 31).

GUJARAT

Amethyst

Several varieties of semi-precious stones occur as pebbles in the Gaj conglomerates in the Amreli district and comprise quartz, amethyst, rose-quartz, chalcedony, agate and opal adjoining the Deaccan trap (Patel 1972:16-17).

Shell

Shells were probably obtained from the Gujarat coast.

Epigraphic, Literary and Artefactual Linkages

There were important political links between Rajasthan and Gujarat that makes the possibility of resource procurement very likely. Nahapana, the Western Kshtrapa ruler had a strong presence in the Gujarat as well as Rajasthan region. Some of their inscriptions mention that that Pushkar in eastern Rajasthan, besides the land of Parad (modern Surat), Soparak, Broach, Dashpur (Malwa), and Prabhas (Kathiawar) were part of his empire. Nahapana's coins were also found in parts of Rajasthan corresponding to this evidence (Hooja 2006:104). The author of the *Periplus* mentions the rule of the Western Kshtrapas in the region of Kathiawar, Gujarat and Malwa (Schoff 1995: 167). The Junagarh Rock Inscriptions of Rudradaman near Girnar Hill testify this fact. According to the inscription, Rudradaman defeated the Malavas and Yaudheyas ruling in different parts of

Rajasthan (Hooja 2006: 104). Silver coin hoards of Western Kshtrapas have been recovered from several sites in Gujarat. These are Amreli, Bhavnagar, Bhagwara, Devnimori, and Dholka (Jha and Rajgor 1994: 68-9).

Rajasthan, in the post-Mauryan period had quite a few urban centres such as, Bairat, Sambhar, Nagari, Rairh and Rang Mahal. At Rairh, Noh and Sambhar manufacturing activity in form of iron smelting, blacksmith's tools and slag indicates that these were metallurgical centres of this period. Rajasthan itself was a resource rich region and had most of the raw materials its sites used. The various resources that were available within were copper, iron, lead, silver, and gold in different parts of the state. The different varieties of semi-precious stones such as quartz, turquoise, beryl, rock crystal, chalcedony, jasper and agate, Chalcedony and carnelian were also found within. Rajasthan was most likely dependent on Gujarat for a few resources such as onyx, amethyst and shells and lapis lazuli was from Afghanistan

Gujarat

Gujarat is situated in the western part of the Indian subcontinent. Saurashtra and Kutch are parts of this peninsular landmass (Singh 1971:879). The region is associated with the Krishna legends. Dwarka is an important place in this connection. Dwarka, Junagarh and Mula Dwarka in Saurashtra are believed to have been founded by the Yadavas under Krishna when they fled from Mathura (Ansari and Mate 1966: 1). This region is also famous for the Ashokan rock edicts at Girnar. The various urban centers here are Amreli, Nagara in Kaira district, Dhatva and Devnimori in Sabarkantha district, Hathab in Bhavnagar district and Timbarva in Baroda district (Rao 1966; Mehta 1968; Mehta and Choudhury 1975; IAR 1959-60: 21; IAR 2001-02:36; Mehta 1955).

Sitewise Distribution Of Manufactured Objects

Chart 14a shows the different raw materials used here. These are copper, iron, lead, gold, silver, carnelian, quartz, crystal, jade, garnet, chalcedony, agate, rock-crystal, ruby, lapis lazuli, chert, sandstone, granite, quartzite, steatite, shell, coral, chank, and faience.

Chart 14a

Gujarat—c.200 B.C.—300 A.D.

Raw Materials	*Nagara*	*Lothal*	*Dwarka*	*Padri*	*Rajkot*	*Dharola*	*Broach*	*Timbarva*
Copper/Bronze	coins,bowls, fingerring, nails,lid, bar,rods,	objects, bell	washer sheets, Bronze bell	coins, lamp	coin hoard		coins	bar
Iron	arrowheads, fishing hook, spikes,chisel, nails,knives, spearhead, blade,dagger							fragment of blade
Lead	ear studs						coins	
Gold	foils							gold foil pendant
Silver	coins				coins	coin		
Semi-Precious stone	Carnelian beads, Crystal, Quartz beads, Jasper, Garnet beads Chalcedony, Agate beads							smoky Quartz beads
Lapis Lazuli	beads							
Jade	beads							
Ordinary Stone	Chert beads, Sandstone querns,Granite quern,Sand-stone muller, Quartzite muller, Granite mullers,Schist figurine, lid							sharpner

Chart 14a (continued)

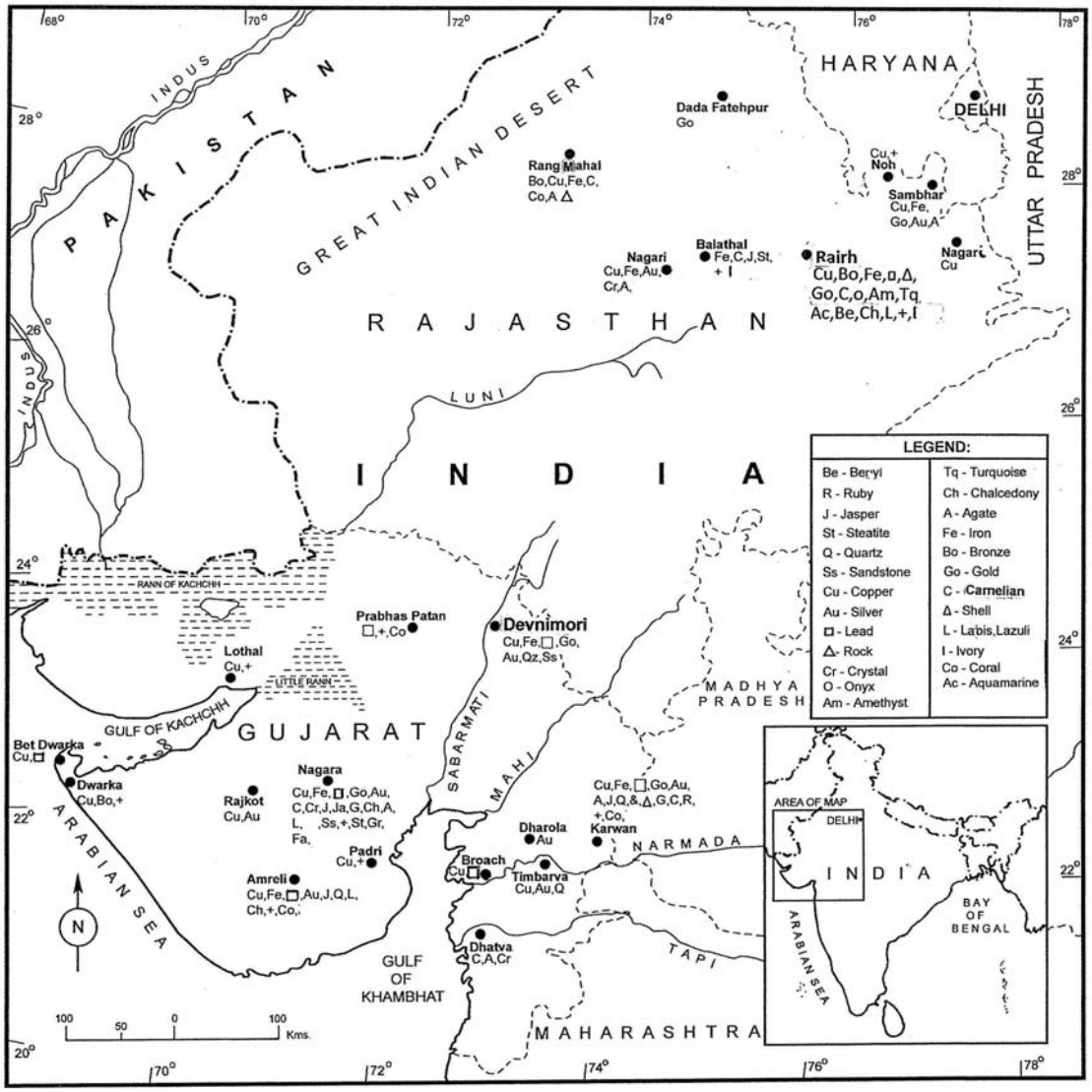
Raw Materials	*Nagara*	*Lothal*	*Dwarka*	*Padri*	*Rajkot*	*Dharola*	*Broach*	*Timbarva*
Steatite/Soap Stone	beads							
Shell	beads	bangles	bangles	chank shell rod				
Faience	beads							

Chart 14a (continued)

Raw Materials	*Amreli*	*Prabhas Patan*	*Karwan*	*Devnimori*	*Kadiya Dungar*	*Dhatva*	*Bet Dwarka*	*Deolol*
Copper/Bronze	coins,bangles, fingerrings, miniature bell, nose ring, antimony rod		coins, objects	coin,box			coin	
Iron	knife,dagger, sickle,disc, arrowheads, fish hooks		nails, bolts	arrowheads, scissors, spearheads, knives, hook, daggers, rings, scikle, door chain, chisel, frying pan				
Lead	coins	coins	coins	piece			coins	
Gold			bead	leaf, pendant				
Silver	coins		coins	coins	coin			coins
Semi-Precious stone	Jasper,Quartz beads, Chalcedony beads		Agate, Jasper, Quartz beads, Rock Crystal, Garnet beads, Carnelian			Carnelian, Agate beads, Crystal ear studs		
Ruby			ring					
Lapis Lazuli	beads							
Ordinary Stone			plaques, beads	stone mullers, Schist mullers, caskets, Sand-Quartzite beads, hammer				
Shell/Coral	beads, conch shell pendants, bangles, coral beads	bangles, ear studs, beads	bangles, objects					

MAP-14

SITE -WISE DISTRIBUTION OF RAW MATERIALS IN RAJASTHAN AND GUJARAT c. 200 BC - 300 AD



Evidence of Manufacture of Finished Products At Different Sites

Chank: Turbinella Pyrum was a material used at Nagara for making a variety of ornaments. The antiquities reveal besides finished products, slices of chank and their stems. These waste products of manufacture indicate that chank industry might have flourished at Nagara (Mehta 1968:127).

Iron: At Dhatva the surface was strewn with slag and hematite stones and raw materials for iron smelting was also obtained. Lumps of iron and metallurgical tap slag and chunks of iron ore were also encountered on the surface besides the concerned layers. Excavation indicates that the iron smelting industry grew in strength with time (Mehta and Choudhury 1975: 18, 48).

Character of Sites and Distribution of Manufactured Objects

The ancient mound at Dhatva is known as Rundi Mora. The site yielded Roman amphorae dated to the first century A.D. The ceramic industry here indicates an early historic habitation in the region (Mehta and Choudhury 1975: 1). Iron smelting industry was also evidenced during the period (IAR 1967-68: 20).The structures of bricks are noted throughout the site (Ghosh 1990: 138). Nagara in Kaira district is another urban center of this period. Antiquities suggest that the site was occupied from the early centuries of the Christian era. Roman amphorae found here suggest that there were imports from the western world. This exchange started from the beginning of Christian era from the first century A.D. approximately (Mehta 1968: 8, 17). The other well-known urban centre here is Broach. It is an important early historic city known as Bharukachchha or Bhrigukachchha on the Narmada. This was a port town with several trade routes touching it. Ancient literature speaks about its connections with different parts of the world. The Gulf of Barygaza has been noted by Ptolemy as a great commercial emporium on the estuary of the Narmados or Narmada. The author of the *Periplus* notes that different commodities especially gemstones came to Barygaza from Ujjain and other parts for export (McCrindle 1885 repreint 2000: 38, 155). In fact, an entire section in the *Periplus* is devoted to the import and exports to this port (Schoff 1995: 287). In the excavations, the early centuries A.D. levels revealed a mud rampart with heavy brick revetments (Chakrabarti 1997: 227). Shamlaji in Sabarkantha district has evidence of early historic town planning. A brick

built fortification was found here (Chakrabarti 1997: 227). Lothal is another ancient dockyard of the Harappan period.The site has yielded early historic period material as well (IAR 1954-55: 13). Hathab in Bhavnagar district yielded material evidence of an ancient city from early centuries to the fourth century A.D. This period exposed pavements of stone and burnt bricks for structures (IAR 2001-02: 36). A.Ghosh (1990:139) observes that due to the geographical position of Gujarat, sites such as, Bharuch, Nagara, Hathab, Veraval grew as entreports where local goods were exchanged for foreign ones. Other sites such as, Amreli, Ajabpura, Sanand and Dwarka were equally thriving commercial centers. These sites are characterized by brick habitational structures, religious monuments and use of exotic pottery.

Resource-use at these urban sites differs from site to site. There are sites like Nagara which have yielded a number of artifacts as well as variety of raw materials. Also there are sites like Broach yielded less number of artifacts. Copper has been used extensively at Nagara as nails, lids, and bowls, coins and bells. Iron too has been used profusely there. These are mostly in form of implements as daggers, chisel, sickle, knives and nails. Iron artifacts are conspicuously absent from Dhatva, a site where one finds evidence of manufacture of iron artifacts. The details of the same have been noted previously. The use of lead is in form of ear studs and coins only at Nagara and Lothal. Again Nagara has produced gold foils and silver coins.

A variety of semi-precious stones have been used at Nagara and Dhatva mostly for beads and ear studs. Carnelian, agate and crystal are common to Nagara and Dhatva. The raw materials used exclusively at Nagara are jasper, quartz, jade, garnet and chalcedony. Lapis lazuli is one significant material used at Nagara in form of beads. Chert and sandstone have been used in form of mullers and querns respectively. Steatite, shell and faience were found as beads at Nagara. Bone artifacts are abundant here. In terms of number of artifacts and variety of resource usage the site of Nagara substantiates its urban chracter.

The small sites explored in the Saurashtra province are Rajkot, Dharola in Vadodara district, Valabhi, Padri in Bhavnagar district, Timbarva in Baroda district and Kadiya Dungar in Broach district, Karwan in Vadodara district (IAR 1976-77: 18; 1987-88: 131; 1983-84: 166-67; 1979-80: 24; 1990-91: 9-10).Timbarwa in Baroda district is a

site with red polished ware pottery of the early centuries A.D. (Mehta 1955: 3). From Vadodara which was the ancient site of Vadapadraka, a large burnt brick structure, Roman bronzes and early Kshatrapa coins were recovered (Chakrabarti 1997: 228).

The pattern of resource-use at these sites is scanty. Copper coins are the common objects made of copper. Timbarva has yielded a copper bar. Karvan and Timbarva have produced iron artifacts such as nails, blade fragments and bolts. No other site has yielded any iron artifacts. Lead coins are found only at Karvan and Prabhas Patan. Gold beads and foil pendants are found at Karvan and Timbarva respectively. Karvan, Dhrola, Rajkot, Kadiya Dungar and Prabhas Patan have yielded silver coins.

The use of semi-precious stones is profuse at Karvan. The variety of raw materials used at this site as beads are agate, jasper, rock crystal, garnet, carnelian and ruby. Shell bangles are also found only at Karwan and Padri. At the latter site a chank rod was found. Among the small sites raw material usage is concentrated at Karvan. Most of the resources have been used at this site only. This is also the lone site where ruby has been used.

Devnimori has a large Buddhist establishment of which a *stupa* and a monastery were excavated (IAR 1959-60: 21). The reliquary was a circular casket containing silk bags, a small gold bottle and pieces of wood (IAR 1962-63: 8). Bet Dwarka Island situated in the Gulf of Kachchh near Okhamandal is famous for temples dedicated to Lord Krishna. It is also known as Bet Shamkhodar (Sundaresh and Gaur 1998: 77). Dwarka is one of the most famous Vaishnava centers of India. It is famous for temples dedicated to Lord Krishna. Amreli in the Saurashtra province was an ancient site known as Gohilwad Timbo. The mound of Gohilwad is situated one mile west of Amreli. Coins of Indo-Greeks and Khatrapas substantiate their rule in this part. This site appears to be an important centre for various religious sects. Brahmanism as well as Buddhism both received patronage under the rulers here. The remains of a Buddhist structure along with a terracotta figurine of Bodhisattva were also recovered. Votive jars offered in ceremonies have also been found (Rao 1966: 1, 6, 14). Goraj in Vadodara district was an important district in ancient times. A brick temple built around the Kshtrapa period (1^{st}-4^{th} c. A.D.) was unearthed here (Pande and Vyas 1989-90: 108).

The most diverse resource usage can be seen at the religious sites in this province. Copper and iron has been extensively used at Amreli and Devnimori. Copper was used in the form of coins, antimony rods, bells and nose rings. Iron artifacts are mostly in the form of implements and tools. Lead has been used as coins at Amreli, Devnimori and Bet Dwarka. Gold pendants are exclusive to Devnimori only, while a silver coin is found both at Amreli and Devnimori. It is noteworthy that the variety of semi-precious stones at these religious sites is very less as compared to the urban sites. Beads of jasper, quartz and chalcedony have been found here. Lapis lazuli is one special raw material used at Amreli as beads. Bone objects in the form of dice, pins awls are found only at Amreli.

On the whole, the amount and variety of resource usage at religious sites is quite impressive. Raw materials such as lapis lazuli are exclusively found at urban sites such as Nagara and Amreli. It is clear that the diversity in resource usage and material abundance of religious sites is no less than the urban areas.

Raw Materials Available Within The Sub-Region

Shell

Shell is available in the entire Gujarat coast.

Copper

Rupwati mine in Kathiawar has native copper (Biswas 1996: 325).

Gold

Gold is available in the Alech hills in Barkunda in Baroda district (Ziauddin and Narayanswami 1974:101). A number of rivers and streams which take their rise in outer ranges of tertiary (Sivalik) rocks on the borders of Champaran district are known to have been auriferous and gold washing is carried on annually (Ball 1881: 217-18).

GUJARAT

Semi-Precious stones

Conglomerates of agate and chalcedony are collected from Cambay. They are available in the following districts.

Ahmedabad district: White veined agate came from Rangpur in Ahmedabad district. Rajpipla is also a common source for onyx (Brown 1936: 299). Valentine Ball noted that jaspers, agate, and carnelian were picked up in the rivers adjoining the Deccan Trap and these were collected (Ball 1881: 506).

Amreli District: Several varieties of semi-precious stones occur as pebbles in the Gaj conglomerates and comprise quartz, amethyst, rose-quartz, chalcedony, agate and opal adjoining the Deaccan trap (Patel 1972:16-17).

Jamnagar District: Varieties of semi-precious stones occur in the district near Beraja, Navagam, Latipar, Jivapur, Timbdi and Vijarkhi. The stones are chalcedony, agate, amethyst and onyx (Patel 1970: 30).

Tin

Tin is available at Hosainpura, Banaskantha district and Jambughora situated towards the east of Champaner (Chakrabarti 1997: 113)

Iron

Iron ore is available in the following districts in this region.

Ahmedabad district: Ball noticed that slag remains here were the only testimony of the former existence of iron works (Ball 1881:400)

Jamnagar district: In this district iron ore is found at Mota, Arota, Khamhalia, Modpar and Rampar (Patel 1970: 31).

Kutch district: Ferruginous laterites iron ore is common in Kutch and is noticed near Bhachau, Lunwas, Dudhai and Matano Madh (Patel 1971: 25).

Amreli district: Laterite iron ore occurs as small pallets and nuggets in northwest of Char and to south of Narmada river (Patel 1972: 15).

Chert

Chert bands occur in the Narmada valley (Mallet 1887:75)

Raw Materials Available Outside The Sub-Region

The presence of silver, lead, quartz, steatite, garnet, ruby and iron (Rajasthan), jade (Turkestan) and lapis lazuli (Afghanistan) has already been noted (p.30,31, 55,109,and 110, 111).

Epigraphic, Numismatic and Literary Linkages

Rajasthan was an important resource area for Gujarat. Ptolemy informs us the province of Abiria lying on the east of the Indus, Patalene (the Indus delta) and Syrastrene as regions governed by the Indo-Scythian or Saka rulers (McCrindle reprint 2000: 369). Subsequently coins of the Western Kshtrapa rulers of Saurashtra have been found from several sites in Rajasthan. They are Ahore, Jalor, Sarvania, and Banswara where we find coins of Rudrasena I and Yasodharman I. Silver coins of Bhumaka and Nahapana have been found from Nagari in Chittorgarh district and Pushkar in Ajmer district (Jha and Rajgor 1994: 72, 77).

Gujarat is a resource rich region with several resources available within its boundaries. The region had different types of urban, religious and small sites and manufacturing activity is reported from Nagara and Dhatva, two urban sites. Several resources were available within the region. These were iron, gold, and tin for bronze, copper, agate, carnelian, chalcedony, jasper, chert and shell. The resources for which the Saurashtra region was dependent on other areas are iron, silver, lead garnet, quartz and steatite. These were procured possibly from the nearby area of Rajasthan. Jade and lapiz lazuli are the only raw materials for which the Saurashtra province was dependent on far-flung territories such as Turkestan and Afghanistan respectively. It indicates the possibility that the region of Saurashtra was involved in trade with its neighbouring as well as reasonably far off regions during this period.

Maharashtra

The region of Maharashtra falls in the peninsular uplands and has three physiographic divisions. These are the Sahyadri, Tapi and Puna valley in the northern half and the plateau region in the center (Singh 1971: 40-44). There are several iron bearing megalithic sites in the Vidarbha region. They are in Nagpur, Kolhapur, Ratnagiri, Khandesh and Poona districts (IAR 1984-85: 52; 1981-82:71; 1978-79:71; 1966-67:25) and there are sites here that continued from the megalithic phase to the early historic period. Vidarbha was part of the *Dakhinapatha* in the past. Several important sites are located here.They are Bhokardan which stood on the trade route of *Dakhinapatha* from Ujjaini to Pratishthana (Deo 1974), Pauni (Deo and Joshi 1972), Ter (Chapekar 1969) and Kaundinyapura (Dikshit 1968).

Chart 15a
Maharashtra—c. 200 B.C.---300 A.D.

Raw Materials	*Bhokardan*	*Kaundinyapura*	*Pauni*	*Ter*	*Arni*	*Pune*	*Adam*
Copper/Bronze	coins,fingerring ear ornament, rattle,small pots, fish-hooks,bells	beads,miniature bell,hook,pin, bangle,antimony ring of vessel	talisman, coins,beads, bangles,bowl, round bars, ring,wire,bell, toe-ring,handle, antimony rods, tinklet,ring, tweezer,coiled strip,miniature bowl	coins	coins	coin	spoon,mirror handle, coins,cart wheels, beads,pendants,cart frame,implements, fingerrings,lamps, antimony rods, earrings,ladle
Lead/Potin	coins,object Potin coins		coins, ring, ear stud				coins
Iron	pair of tongs, ladles,shovel, bowls,nail,parers, chisels,sickels, choppers,knives, spikes,arrowheads, clamps,fish-hooks	flat blade,javelin end,blade of knife, chisel,pans,strip,	chisel,axe,nail, ferrule,ring, dagger,hinge, knife,clamp, clip,hook,ladle, anvil,arrowheads, kitchen aids		nails,blades slag		ploughshare,beads, chisel,points,knives, arrowheads,sickle, spearhead
Gold	gold foil beads	beads	talisman		beads		beads, Roman coins
Silver	coins		coins, unspe-cified ornament				coins
Semi-Precious stone	Crystal,Carnelian Agate beads, pendant,Crystal Opal beads, Jasper beads, amulets	Carnelian,Agate beads, Crystal bead, Garnet beads, Jasper beads, ear studs	Agate, Jasper beads, Crystal beads, Carnelian Agate pendant, Amethyst pen-dant, unfinished Carnelian beads,	Carnelian, Agate beads, Carnelian seals	, unspecified beads, ear studs		Jasper ear studs, Chalcedony stylus, Agate, beads Agate, Jasper Chalcedony, Crystal pendants Garnet beads
Pearl			bead				
Jade	beads						
Lapis Lazuli	beads	beads	beads	beads			

Chart 15a (continued)

Raw Materials	*Bhokardan*	*Kaundinyapura*	*Pauni*	*Ter*	*Arni*	*Pune*	*Adam*
Ordinary Stone	saddle querns,skin rubber,dabbers, sharpners,balls, bead polishers, rotary quern		Chert beads, Limestone bead,Sand-stone quern, Marble piece, muller,rotary quern				Chert bead, Sandstone pestle, weights, moulds
Steatite/Soap-stone	Soapstone bead mould	beads	beads, seal, Soapstone dish, bowl, lid				moulds
Shell/Coral	beads, bangles, rings, antimony holder ,rims of pots, handle, kohl sticks Coral beads	bangles, beads	bangles	beads, bangles	bangles, beads, ear ornament		bangles
Faience	beads	beads	beads				coin copies
Ivory	beads,kohl sticks,bangles, comb,handle, points,statuette, part of figurine		beads, seal, hair pin, stylus	pieces			pendants,beads, bangles

Chart 15a (continued)

Raw Materials	*Gadchiroli*	*Tharsa*	*Irla*	*Paunar*	*Arambha*	*Bhawar*	*Pachikheri*	*Mansar*
Copper/Bronze	beads	coin		coins,finger-rings,rattle, rod				pendants, earrings
Iron		nails, chisels	blade, knife,	nails, blade,	ferrule	knives, rods,	arrowheads, knives,	
			nails	chisels, sickle, spearhead, arrowhead, bangle, hook, clamps		nails, clamps	clamps	
Silver				coins				coin, trinklets
Semi-Precious stone	Carnelian, Crystal beads, Jasper beads	beads		Crystal beads, ear studs, shivalinga	Agate, Carnelian beads		unspecified beads	
Ordinary Stone				Marble bead, stone plaques	Limestone beads spindle whorl	querns, mullers	polisher, grinder	
Steatite/ Soapstone	beads							
Shell	beads	bangles, beads	bangles	bangles ,rod, handle				studs
Ivory		pendants,ear ornaments						

Chart 15a (continued)

Raw Materials	*Gangapur*	*Malkapur*	*Kanheri*	*Walva*	*Katangi*	*Sakoli*	*Ranjangaon*
Copper/Bronze	bowls, shallow lamps, bangles				coins		coin
Iron	axes, sword, daggers, nail, parers, rings						
Gold							
Lead			coin	coin			
Silver		coins				coins	coins
Semi-Precious Stones	Carnelian, Agate, Jasper beads						

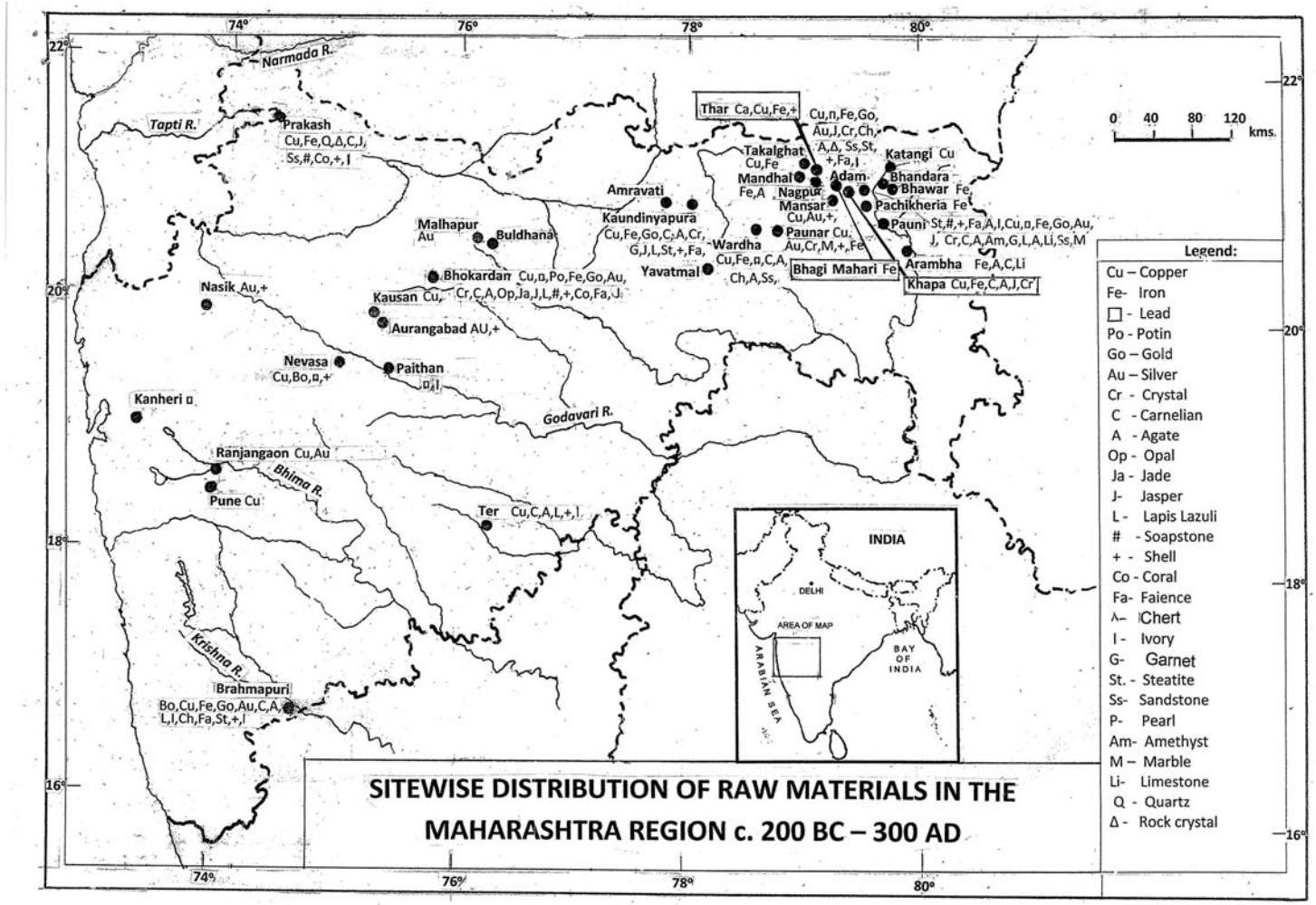
Chart 15a (continued)

Raw Materials	*Aurangabad*	*Nasik*	*Bhagimahari*	*Nevasa*	*Kausan*	*Paithan*	*Khapa*	*Takalghat*
Copper/Bronze			bangles	coins, Bronze dish	coins		ear ornaments, bangles, adzes, pokers,drills, dish,lid,bowls	fragmented pieces
Lead				coins		coin		
Iron			axes,knives, daggers, bangles, arrowheads				axes,sword, spearhead, adzes,drills, frying pans, fragmentary blades, lamps, daggers, knives	spears, drills
Silver	coins	coins						
Semi-Precious stone						unspecified ear-reels	Carnelian, Agate beads, Jasper, Crystal beads	
Ordinary Stone				querns, mullers		legged quern		
Shell	bangles	bangles						
Ivory				seal		kohl stick		

Chart 15a (continued)

Raw Materials	*Brahmapuri*	*Prakash*	*Wardha*	*Mandhal*
Copper/Bronze	Bronze vessel, stattute	antimony rods, pin,bangle,lid, bell, ear ornaments, coins	coins, bead	
Iron	arrowheads ,hook, spatula,pin,nails, harpoons	spool,coiled strip, rod,ferrule,nail, bangle,shaft hole, axe,coiled ring, clamp,ring fastner, dish	ploughshares, chisel,knives, arrowheads	nails
Lead			coins	
Gold	pendant			
Silver	plaque			
Semi-Precious stone	Carnelian, Agate, beads, Jasper Chalcedony beads	Quartz beads, Rock-Crystal beads, Carnelian, Jasper beads, Carnelian stick	Carnelian bead, Agate, beads, Chalcedony beads	Agate beads
Lapis Lazuli	beads, pendants			
Ordinary Stone	saddle quern, pestle, rotary querns	querns, mullers, Sandstone muller	Chert beads, Sandstone slab	
Faience	beads			
Steatite/ Soapstone	beads	Soapstone casket		
Shell/Coral bangles		Coral bead, Shell bead, bangles		
Ivory	bangles	comb	beads	

MAP-15


Narmada R.
Tapti R.
Godavari R.
Bhima R.
Krishna R.
Prakash Cu,Fe,Q,Δ,C,J, Ss,#,Co,+,I
Thar Ca,Cu,Fe,+
Cu,n,Fe,Go, Au,J,Cr,Ch, A,Δ, Ss,St, +,Fa,I
Takalghat Cu,Fe
Mandhal Fe,A
Adam
Katangi Cu
Bhandara
Bhawar Fe
Nagpur
Mansar Cu,Au,+,
Pachikheria Fe
Pauni St,#,+,Fa,A,I,Cu,n,Fe,Go,Au, J, Cr,C,A,Am,G,L,A,Li,Ss,M
Amravati
Kaundinyapura Cu,Fe,Go,C,A,Cr, G,J,L,St,+,Fa,
Malhapur Au
Buldhana
Wardha Cu,Fe,n,C,A, Ch,A,Ss,
Paunar Cu, Au,Cr,M,+,Fe
Yavatmal
Bhagi Mahari Fe
Arambha Fe,A,C,Li
Khapa Cu,Fe,C,A,J,Cr
Bhokardan Cu,n,Po,Fe,Go,Au, Cr,C,A,Op,Ja,J,L,#,+,Co,Fa,J
Nasik Au,+
Kausan Cu,
Aurangabad AU,+
Nevasa Cu,Bo,n,+
Paithan n,I
Kanheri n
Ranjangaon Cu,Au
Pune Cu
Ter Cu,C,A,L,+,I
Brahmapuri Bo,Cu,Fe,Go,Au,C,A, L,I,Ch,Fa,St,+,I
INDIA
DELHI
AREA OF MAP
BAY OF INDIA
ARABIAN SEA
0 40 80 120 kms.
Legend:
Cu – Copper
Fe- Iron
□ - Lead
Po - Potin
Go – Gold
Au – Silver
Cr - Crystal
C - Carnelian
A - Agate
Op - Opal
Ja - Jade
J- Jasper
L - Lapis Lazuli
- Soapstone
+ - Shell
Co - Coral
Fa- Faience
λ– Chert
I - Ivory
G- Garnet
St. - Steatite
Ss- Sandstone
P- Pearl
Am- Amethyst
M – Marble
Li- Limestone
Q - Quartz
Δ - Rock crystal
SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE MAHARASHTRA REGION c. 200 BC – 300 AD

Sitewise Distribution Of Manufactured Objects

Chart 15a displays the raw materials used in this region. They are copper, bronze, iron, lead, potin, gold, silver, carnelian, agate, jasper, chalcedony, quartz, crystal, opal, amethyst, garnet, jade, pearl, lapis lazuli, chert, limestone, marble, sandstone, faience, steatite, soapstone, shell, ivory and bone.

Evidence of Manufacture of Finished Products At Different Sites

Carnelian, Crystal and Agate: Beads in an unfinished state were found in large numbers at Pauni. It shows that bead manufacturing flourished here (Nath 1998:64) Unperforated beads of agate, carnelian, chalcedony and jasper were found at Kaundinyapura from Satavahana as well as Kushana layers (Dikshit 1964: 94-95). From the flaked core pieces and the partly perforated beads it is logical to conclude that carnelian beads were manufactured at Bhokardan. Several of the beads in an unfinished stage indicate that these were manufactured locally. Some worked nodules were also found at the site (Deo 1974: 121, 123, 124). Bead manufacturing was evidenced at Gadchiroli district. Beads in various stages of manufacture and bead polishers were recovered in the excavations from the Satavahana levels (IAR 1989-90: 65). Semi-finished beads, raw materials and polished stones have been recovered from Adam in Nagpur district indicating a flourishing bead making industry at the site. Presence of sandstone and steatite moulds also suggests the use of the site as a workshop of cast antiquities (IAR 1990-91: 49-50).

Shell: Abundance of shell objects, scores of waste pieces of marine shell columella, small perforated shells and unfinished bangles and bead indicate a prosperous shell industry at Bhokardan. Two moulds for bead manufacture and a bead polisher were also found (Deo 1974: 140). Shell objects in various stages of manufacture and an ornament with incomplete perforation at the centre were collected from Ter in Osmanabad district. These indicate a local industry in shell at Ter as well (Chapekar 1969: 102).

Iron: A large number of objects and lump of slag were found at Kausan and Paithan in Aurangabad district (IAR 1965-55: 29). Excavations at Kanheri revealed iron ore, furnaces, crucibles and slag (IAR 1969-70: 22). At Arni, a big chunk of iron slag was found below the wall of phase one belonging to the post-Mauryan layer (IAR 1978-79: 72).

Character of Sites and Distribution of Manufactured Objects

Adam is an urban site with an antiquity that includes dynasties such as Bhadras, Mitras, and Satavahanas on the basis of numismatic and epigraphical evidence. Structural remains revealed were a three coursed wall, elliptical in shape with an entrance to the east. Outside the enclosed complex remains of burials were noted. Terracottas, human and animal figurines were found and a sealing with "Asika" inscribed on it. Pottery in this period was mostly red ware of medium and coarse varieties and rouletted ware associated with Roman trade (IAR 1988-89: 59; Chakrabarti 2005: 58). Eleven gold coins belonging to the Roman Emperor Augustus Octavianus were recovered from here (IAR1970-71:62). Interestingly, cast copper coins of Takshasila origin were found at the site dated to the pre-Satavahana period and even later. This strongly indicates its links with Takshila in the northwest (Chakrabarti 2005: 58). Remains of a stupa were unearthed at site locally known as Devi hudki at Adam. The stupa was circular in plan (IAR 1988-89: 62). Kaundinyapura in Amraoti district was an ancient town whose antiquity can be traced to the Bramhanas and Upanishads. This was the capital of ancient Vidarbha in antiquity (Dikshit 1964: 1).The Satavahana layers yielded brick lined sokage wells, red polished ware and coins. Period V yielded a few terracotta votive tanks of 'late Satavahana' period dated c.200-500 A.D. (Chakrabarti 2005: 64). Brahmapuri in the Kolhapur district was an ancient city with sequence of cultures from the Satavahana period of first century A.D. According to the *Puranas,* this tract of the country was originally called ‘Kurveer’ from the Goddess Mahalaxmi. She is said to have used her ‘kur’ or mace for lifting her favoured retreat from the great deluge (Sankalia and Dikshit 1952: 1). The city dated back to c.200 BC but flourished in the early centuries A.D. Four burnt brick houses have been excavated dated to this period. They were built on a foundation of large pebbles embedded in layers of clay and roofed with tiles. The houses had at least three rooms and the houses had passages in between (Chakrabarti 1997: 220). As Allchin and Erdosy (1995: 306) put it, Brahmapuri was a Satavahana city with burnt-brick houses, coins and known for its Roman bronze images and vessels. Several copper and lead coins of the Satavahanas and Greaco-Roman bronze statue and vessels were found in excavations (Sankalia and Dikshit 1952:

9, 35). Votive tanks with applied lamps on rims dated to first to third century A.D. were found in the exactions at Brahmapuri. Pottery of red polished ware with spouts and sprinklers occur from the first to the fourth century A.D. were also found here (Ghosh 1991: 277, 188-9).

Paunar in Wardha district has been identified with the ancient Pravarapura, the capital of the Vakatakas who ruled over Vidarbha from third to sixth century A.D. (Deo and Dhavalikar 1968: 1-2).Coins and epigraphs of Western Kshatrapa rulers are found here. A few fragments of Roman amphorae from period II dated 2^{nd}-3^{rd} c. A.D. attest to its trade connection with Rome. Houses equipped with ring wells for drainage and floors of lime and clay are noted at Paunar (Deo and Dhavalikar 1968: 3, 9). Bhokardana or ancient Bhogavardhana was the capital of the Satavahana kings. The city was an important link with the south. The name was derived on Krishna's son Bhagadhnatha which subsequently was corrupted to Bhogavardhana (Deo1974: 3). Ash-pits were encountered in the habitational deposits of the Satavahana-Kshtrapa layers. A twin hearth resting a patch of lime floor and a post hole was found in the excavations (Deo 1973: 10-11). Coins of Kardamaka rulers and red polished ware are noted here (Deo 1973: 17). Takalghat and Khapa in the district are well known megalithic sites. Stone circles with pottery of coarse red ware were found at Khapa and Gangapur in Nagpur district (IAR 1968-69: 17). Prakash in Dhulia district is a chalcolithic site in this region. Its antiquity is from the chalcolithic period (1700-1300 B.C.) to the historical period (till about eleventh century A.D.). Satavahana sites such as Nevasa, Paithan, Bhokardan and Ter have yielded sculptures of Lajjagauri and are reported from the early historical period (Deo 1973: 2). Mahurijhari in the vicinity of Nagpur was a flourishing bead making centre of the Gupta period. However in the early historical period, habitation seems to have taken place away from the previous megalithic burial sites (Deo 1973: 4). A large amount of full sized burnt bricks and brickbats of Satavahana period were found along with pottery of thin red ware (IAR 2001-02: 124). Nasik was a place mentioned by Patanjali and was called '*nagara*'. Period II at this site has two sub-periods. The latter sub-period dated c. 200 B.C-50 A.D. and had a few houses which had mud walls with soakage pits. Period III dated 50-200 A.D. had burnt brick houses (Chakrabarti 1997: 229).

The nature of raw material usage at these urban sites is impressive. At Adam a greater variety of copper artifacts are found. They are spoons, mirror handle, beads and fingerings. Other finished products of copper range from ornaments such as finger rings, ear ornament, beads, toe ring, bangles, and trinklets to miscellaneous objects as rattle, fish hooks, tweezers, and mirror handle and so on. At Takalghat and Khapa, two megalithic sites we find a few tools such as adzes, pokers and drills and fragmented pieces made of copper. Bronze statues and vessels of the Greaco-Roman style were found at Brahmapuri. Iron too has been extensively used. The artifacts are mainly tools and implements such as daggers, arrowheads, sickles, chisels, fishhooks, spearheads and so on. Lead and Potin coins are also found at Bhokardan, Pauni and Paithan. Lead coins, gold beads and silver coins are also found at Adam.

Amongst precious metals gold has been used less in comparison to silver. Gold beads and foils are found and silver mainly in the form of coins. Semi-precious stones such as carnelian, crystal, agate, quartz, garnet, jade, and japer has mainly been used as beads and pendants. At Paunar, a crystal *shivalinga* has been found. Chert, limestone, sandstone and marble have been used as ordinary stones in the form of mullers, plaques, beads and so on. Lapis lazuli beads have been found at most of the urban sites. They are Bhokardan, Kaundinyapura, Pauni, Brahmapuri and Ter.

Other materials such as faience beads have been found at the urban sites at Brahmapuri, Bhokardan, Kaundinyapua and Pauni. Soapstone beads, and steatite caskets, dish and bowls have also been found at these sites. Sandstone mullers are found at Adam. Shell and coral beads and bangles are also quite common at many sites including the urban ones. Ivory too has been extensively found at several urban sites in the form of awls, beads and bangles.

The small sites in this region are numerous. They are Arni, Pune, Gadchiroli, Tharsa, Bhawar, Bhagi Mahari, Mansar and Umred (IAR 1978-79: 72; 1984-85: 145; Nath; IAR 1989-90: 65, 67; 1992-93:62; 1982-83: 62; 1994-95: 57; 1970-71: 62). Tharsa has proto-historic levels (Chakrabarti 2005: 60). Beads in various stages of manufacture have been noted at Gadchiroli (IAR 1989-90: 65). Arni in Yavatmal district has revealed three phases in excavations from the megalithic to Satavahana period. Period III assigned to the post-Mauryan phase has three phases of structural activity. The

structures are of massive baked bricks. The houses were provided with wells and bathrooms. A painted tan ware pottery was for the first time unearthed at Arni in the Vidarbha region. A few sherds of rouletted ware and Kaolin ware too were reported. Coins of Satavahanas were found in large numbers along with a terracotta sealing. Other terracotta objects were also found here (IAR 1978-79:71-2). Copper coins and beads are the most common artifacts found at these sites. The other site that has gold objects is Arni in form of beads. Umred has yielded a Roman gold coin. Silver coins are found at quite a few sites such as Malkapur, Sakoli, Ranjangaon, and Nasik.

The different semi-precious stones used at these small sites are carnelian, crystal, agate, quartz, garnet, jade and japer mainly been used as beads and pendants. Pearl beads are found at Arni. This seems to be an interesting find as none of the neighbouring sites have yielded pearl beads. Limestone beads are found at Arambha. Steatite moulds, shell beads and bangles as well as bone and ivory objects are also found at only at a few sites of this kind.

Ter in Osmanabad district was a religious cum urban center that developed contacts with Rome. It is identified with ancient Tagara and was known for its commercial connection with the western world sometime after 50 A.D. Evidence of this contact is there in the form of a Roman settlement beyond the Terana river where remains of large houses have been unearthed. Pieces of Roman amphorae sherds on the surface have also been found (IAR 1965-66: 26; Chapekar 1969: iv). Remains of large houses of baked bricks have been found in the excavations. Chakrabarti (1997:229) reports the structures of the Satavahana period with tiles and roofs, floors with hydraulic lime mortar and attached soakage wells of terracotta rings. The base of a stupa of brick dated to early second century A.D. was found along with an apsidal temple and coins of Satavahana ruler Pulumavi dated the stupa to second century A.D. A tank dated to the first century A.D. was also among the religious structures (Chakrabarti 1997:229). The ceramic industry at Ter was red polished ware, red ware and black ware. The style of pottery and construction suggest that the site was occupied during first-second century A.D. (IAR 1965-66: 26; 1967-8: 35; 1988-89: 63). The author of the *Periplus* mentions Ter as a place where exportable goods were brought and passed on to the west coast (IAR 1968-69: 17).Pauni in the Bhandara district was a prosperous

kingdom under the Khshtrapas as is evident from their silver coins (Deo and Joshi 1969-70: 5). The local tradition indicates that the name Pauni was derived from the mythical king Pawana. In the Puranas, Vidarba is stated to be one of the southern states founded by princes of the Yadu lineage (Deo and Joshi 1969-70: 9-10). Its urban settlement is accompanied by a stupa complex dated from the pre-Maurya to late medieval period at the mound of Jagganath Tekdi. A rampart of rectangular shape showed evidence of habitation prior to the medieval period (Deo and Joshi 1972: 8). The height of the rampart was raised around the Satavahana period in first century BC by constructing parapet walls of burnt bricks (Chakrabarti 2005: 59). Kanheri in Bombay district suburban is a known Buddhist center with many rock-cut caves. A substantial amount of iron ore, furnaces, crucibles and slag prove that the large number of Buddhist monks living in Kanheri caves was engaged in fashioning of metal objects besides preaching. Its urban character is also known from its location near two important trade routes (IAR 1969-70: 22).

Ter is one site where we find a few semi-precious stone such as carnelian and agate beads. Shell beads and bone artifacts were found. The importance of Kanheri lies in the fact that iron slag, lumps and other manufacturing objects were found here. It revealed its character as an industry site despite being a Buddhist center.

Raw Materials Available Within The Sub-Region

Gold

Gold occurs as placer metal with auriferous sands and gravel of a large number of rivers that pass over auriferous rocks. The rivers of Maharashtra are also gold producers from ancient times (Biswas 1996:327).

Copper

Traces of thin films of metallic copper are reported in the trap area near Kolhapur (Maharashtra State Gazetteer: Kolhapur district 1960: 19).Occurences of copper are found near Thanewasna in Nagpur district where dessiminated copper mineralization is found in quartz along Pular. Native copper is recorded in vesicles along joint planes of basalt flows near Kolhapur, Jalakwadi, Rasin and Sirsondi (GSI Misc Pub No. 30, Part II 1974: 22-3).

Galena-Lead

This ore is reported from from Nimbha north of Nagpur that occurs in fragments (*Maharashtra State Gazetteer:* Nagpur district 1966: 14). Lead is also reported from Pauni in the Bhandara district (Maharashtra State Gazetteer: Bhandara district 1979: 27).

Iron

Important deposits of iron ore are found in the Chanda and Ratnagiri districts.

Chanda district: Iron-ore occurs at Lohara, Akola, Dewalgaon, Biasri, Pipalgaon, Puser and ratanpur in the Chanda districts (Wadia 1966: 109).

Ratnagiri district: J.C. Brown (1936: 112) recorded the iron-ore deposits of Ratangiri district. Iron-ores are noted in the southern part of the district amongst babded heamatite, quartzite and laterite forms. They are found in the district at Asoli, Khanavli, Kochra, Mahapan, Pat, Parule, Dhampur, Kalse, Amberi, Damoli and Otavane (*Maharashtra State Gazetteer*: Ratnagiri district 1962: 22).

Kolhapur district: Fair quantity of iron-ore occurs in small quantity in laterite throughout the district (*Maharashtra State Gazetteer* 1960: 20).

Opal

Semi-precious stones such as crystalline quartz, agate, opal are found in the vesicles of basalt flows in the Aurangabad district (GSI Misc. Pub no. 30, Part II 1994: 33).

Semi-Precious stones

The dark coloured volcanic lava occurring near Kolaba district has a variety of secondary quartz like agate, jasper, chalcedony which occupies the lower portion of the ridges and slopes (*Maharashtra State Gazetteer:* Kolaba district 1964: 13). Agate and chalcedony are reported from the trappean portion of the Nagpur district and the Amravati district (*Maharashtra State Gazetteer:* Nagpur district 1966: 14; Amravati district 1968: 14). The amygdaloidal lava has varieties of secondary minerals as quartz, chalcedony, agate, and jasper, rock-crystal in the Jalgaon district and carnelian and onyx in the Parbhani district (*Maharashtra State Gazetteer*: Jalgaon district 1962: 9; Parbhani district 1967: 20).

Sandstone and limestone

Inter-trappean beds comprise sandstones, limestones and shales in the Poona district. Limestone occurs at Phaltan, Kadegaon and Patas in the Poona district (Gazetteer of the Bombay State 1954: 10). Sandstones are also obtained from Kamthi division of lower Gondwanas and Achalpur in the Amravati district (*Maharashtra State Gazetteer:* Amravati district 1968: 14). The Deccan trap has inter-trappean zones consisting of sandstones, shales, limestones and chert in the Nanded district (*Maharashtra State Gazetteer:* Nanded district 1971: 12).

Talc and Soapstone

This is reported in Sakoli tehsil and west of Kausi in Bhandara district (*Maharashtra State Gazetteer:* Bhandara district 1979: 27).

Steatite

Massive fine grained steatite has been recorded at Gollapalli in the Nanded district (*Maharashtra State Gazetteer:* Nanded district 1971: 14). Talc schist occurs in small sheets in Dharwar schists in southern part of Ratnagiri district (GSI Misc Pub No.30, Part II 1974: 33).

Shell

This is available along the coasts.

Ivory

The distribution of elephants in the North Kanara region (Sukumar 1993: 11) indicate that their presence in this region around the Konkan belt. Given the amount of forestland on the Konkan belt, elephants was common and thus, ivory.

Raw Materials Available Outside The Sub-Region

The presence of pearls (Tamil Nadu), silver, and marble (Central India) and lapis lazuli (Afghanistan) has already been noted (p 31,87).

ANDHRA PRADESH

Garnets

Kondapalli in Godavari district has long been famous for garnets. Gharibhpeth in Hyderabad district had precious garnets that were found at a depth of eight to ten feet (Ball 1881: 522)

Epigraphic, Numismatic and Literary Linkages

The links between central India and the Maharashtra region is evident from the donative inscriptions at the Bharhut and Sanchi stupas from inhabitants of Mahismati, Nasik, Berar and Karhataka identified with Karhadin Satara district of Bombay. Gifts of pillars from the inhabitants as well as the entire town of Karhataka are also reported from Bharhut stupa (Luders 1963: 18-22; Ray 1987: 102). Furthermore, the inscriptions at Kanheri, Karle and Sholarwardi have mention of inhabitants of Dhenukataka in the Krishna valley. This indicates that donations to Buddhist monasteries in western Deccan were made by people from different regions and involved movement of people (Ray 1986: 77).

Satavahana presence in the Tamil region can be seen by finds of copper coins belonging to Rudra Satakarni of second century A.D. from Kanchipuram. A few coin moulds (one with a legend in Brahmi and other Ujjaini symbol) were found in excavation at Kanchipuram (Ramachandran 1980: 93, 95). H.P.Ray (1986: 149) has classified the Satavahana coins and attributed coins with the ship symbol to the Coromondal coast. The Sangam epics *Silpaddikaram* and *Manimekalai*, glorify the expedition of the Tamil kings as far as the Himalayan region (Arokiaswami 1972: 20). The numismatic evidence suggests that the influence of Pulumayi extended as far as the Coromondal Coast in the south and Chanda district in the Central Provinces as observed by Roychoudhuri (1996: 439). Further, *Manimekalai* mentions the collaboraton of architects from Maharashtra, blacksmiths from Malwa, carpenters from Greece and Rome and jewelers from Magadha with the craftsmen of the Tamil country (Arokiaswami 1972: 70). All this presents strong Tamil links with other parts of the country.

Korkai, the centre for pearl fishery yielded a number of potsherds bearing Brahmi letters assigned to the first century A.D. (IAR 1968-69: 33). This possibly indicates the contact with northern regions beyond the Vindhyas for the procurement of pearls from this site. H.P.Ray (1997: 12) has also pointed to the two marine resources - shell and pearls of the eastern coast -that brought in trade groups from the north. Evidence of this trade network was also in the Roman amphorae found at Ter, Nevasa and Paunar in Vidarbha and Kanchipuram, Vasavasamudram, Uraiyur, Karaikadu on the Tamil region on the east coast (Ray 1988: 321). Interestingly, the site Arni in Maharashtra where pearl beads were

found also yielded a few sherds of rouletted ware in excavations. H.P.Ray (1986: 140) has referred to the uniform distribution of rouletted ware throughout several sites along the eastern coast upto north Sri Lanka. In this regard procurement of pearls from the Tamil land to interiors of Maharashtra is a strong possibility.

Maharashtra was a mixture of several urban sites such as Adam, Paunnar, Kaudinyapura, Pauni, Ter and Bhokardan and so on and small sites as well as urban-religious sites. The artifactual repertoire of these sites was abundant and included different varieties of resources. These were gold, silver, copper, iron and lead and varieties of semi-precious stones. Some of them are carnelian, opal, pearl and lapis lazuli. The evidence of manufacturing of finished products that were noted were located at some of these urban sites such as Pauni, Kaundinyapura, Paithan, Kanheri and Bhokardan that were able to keep good contacts with their resource regions via trade. Evidence of manufacturing activity at the Buddhist centre as Kanheri was an important marker of trade activity associated with religious sites in this period. It possibly indicates that these religious-urban centres were in contact with other Buddhist and urban sites of this period for procurement of resources and distribution of artifacts as well. This is evident from the donative records from the Bharhut stupa. Non-local resources such as lapis lazuli found particularly at urban areas were possibly obtained from Afghanistan. Cast copper coins of Takshasila origin at Adam stongly indicate its links with Takshila in the northwest (Chakrabarti 2005: 58). The use of non-local resources indicated that the region was involved in trade with distant regions. Roman trade contact was evident from the find of Roman amphorae at sites such as Paunar and Ter. Quite a few resources were procured from within. These resources were gold, copper, iron, semi-precious stones, sandstone, steatite, shell bone and ivory. Crystal and garnets were possibly obtained from nearby Andhra Pradesh. Lead, silver and marble were probably brought from Central India. Pearls from the Tamil land were procured by the Central region.

Andhra Pradesh

The Eastern Ghats run the length of Andhra Pradesh. To their east is the coastal plain, to their west, the upland Telangana Plateau. Several rivers, notably the Godavari which crosses the northeast of the state, near the border with Chhattisgarh, and the

Chart 16a
Andhra Pradesh---c. 200 B.C. ---300 A.D.

Raw Materials	*Satanikota*	*Yaleshwaram*	*Peddabankur*	*Dhulikatta*	*Nelakondapally*	*Kudavelli*	*Kotilingala*
Copper/Bronze	bangle,rings		beads,bangles, coins,rings, knife,chisel hooks, hoes, sickels, arrow-heads	statue,rings, antimony rods knives	coins	rings, antimony rods	coins
Iron	slag,blade, dagger,nail parer,spear-head,clamp, chisel,borer, door-ring, nails,ring, ferrule, bangle,sickle	nail,rod spear-head	daggers,blades, sickles,hoes, nails,spades, knives,rivets, chisels,rings, hooks,arrow-heads	agricultural implements, ladle,lamp, hinges,knife		spearhead, nails,	objects
Lead	coins	Roman Coins		coins	coins		
Gold	ring		Roman coins				
Silver				coins	coins		
Semi-Precious stones	Jasper,Agate beads,Opal Carnelian beads, Bloodstone beads		Jasper,Agate, beads Amethyst	Amethyst, Crystal beads, Jasper, Carnelian beads		unspecified beads, bangles	beads,
Lapis Lazuli	studded ring						
Ordinary Stone	Sandstone mullers, legged querns, Marble, Chert beads		stone plaque, saddle querns, pestles, dabbers			stone plaque	
Steatite/ Soapstone					seal	Soapstone seal	
Shell	bangles, beads, rings, pendants		bangles				
Faience				beads			
Ivory	point, handle			beads			

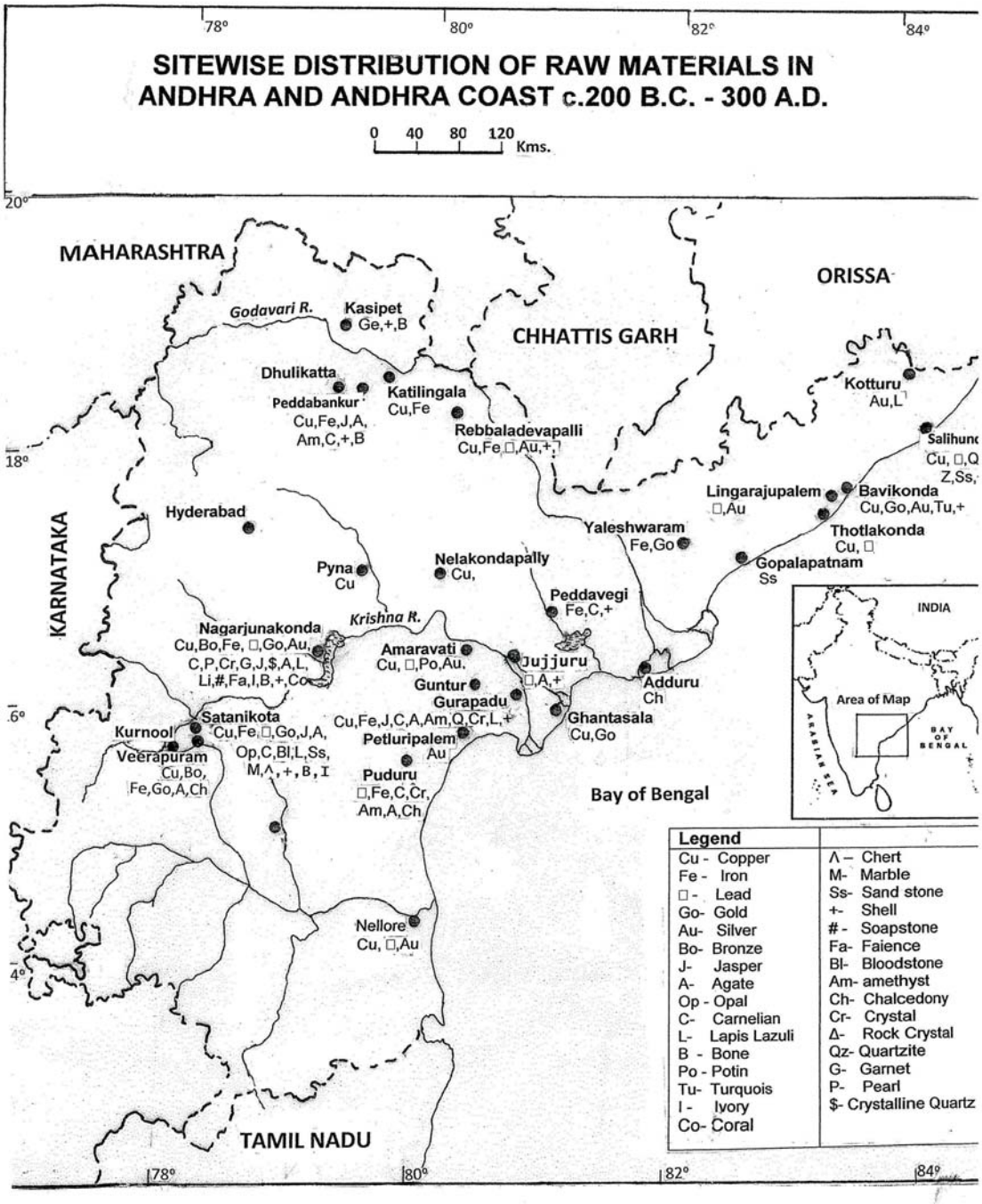
Chart 16a (continued)

Raw Materials	*Kesarapalle*	*Amaravati*	*Nagarjunakonda*	*Penuganduprolu*	*Veerapuram*
Copper/Bronze		coins	Bronze broach, antimony rods, Bronze ring	bangles,rings antimony rods bell, stulus, nails, wires, talisman, dishes, Bronze camphor burner	
Lead	coin	coins, Potin coins		coins	
Iron	spearhead,wedge,ring, lumps, nail, bangle			nails, rivets,knives, rings,bowls,dishes hooks,lids,spoons, ladle,needle,arrow head	
Gold			Roman coin, medallion beads, caskets, tube, flowers, thread box, vessels, ear ornament, necklace	Roman coins	beads
Silver			caskets, flowers, vessels		
Semi-Precious Stones	Jasper, Carnelian, Rock-Crystal beads	Crystal casket, Rock-Crystal pendant, Beryl, Pearl, Crystal bead	Carnelian bead, Pearl bead, Crystal beads, Garnet, Jasper beads, Crystalline Quartz beads, Agate, Crystal beads	Agate, Chalcedony beads, Amethyst beads, Carnelian beads, Crystal beads, Garnet, Jasper beads	
Lapis lazuli	bead		beads	beads	
Ordinary Stone			Limestone pillars, slab, water sprout, legged querns, mullers	Marble balls, mullers, quern, Quartzite shaft	
Steatite/Soapstone				beads	
Faience			beads	beads	
Shell	bangles ,rings		objects, Coral beads	beads, bangles, rings, pendants	
Ivory	bead		pieces, drop pendant, needle		

Chart 16a (continued)

Raw Materials	*Kasipet*	*Rebbaladevapalli*	*Nandyal*
Copper/Bronze		coins	
Iron	Slag	slag	
Gold			Roman coins
Shell	Bangles		

MAP-16


78°
80°
82°
84°
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
ANDHRA AND ANDHRA COAST c.200 B.C. - 300 A.D.
0 40 80 120 Kms.
20°
18°
16°
14°
MAHARASHTRA
ORISSA
CHHATTIS GARH
KARNATAKA
TAMIL NADU
Bay of Bengal
Godavari R.
Krishna R.
Kasipet
Ge,+,B
Dhulikatta
Peddabankur
Cu,Fe,J,A,
Am,C,+,B
Katilingala
Cu,Fe
Rebbaladevapalli
Cu,Fe,□,Au,+,
Kotturu
Au,L
Salihund
Cu, □,Q
Z,Ss,
Lingarajupalem
□,Au
Bavikonda
Cu,Go,Au,Tu,+
Thotlakonda
Cu, □
Gopalapatnam
Ss
Yaleshwaram
Fe,Go
Hyderabad
Pyna
Cu
Nelakondapally
Cu,
Peddavegi
Fe,C,+
Nagarjunakonda
Cu,Bo,Fe, □,Go,Au,
C,P,Cr,G,J,$,A,L,
Li,#,Fa,I,B,+,Co
Amaravati
Cu, □,Po,Au.
Jujjuru
□,A,+
Guntur
Gurapadu
Cu,Fe,J,C,A,Am,Q,Cr,L,+
Adduru
Ch
Ghantasala
Cu,Go
Satanikota
Cu,Fe,□,Go,J,A,
Op,C,Bl,L,Ss,
M,Λ,+,B,I
Kurnool
Veerapuram
Cu,Bo,
Fe,Go,A,Ch
Petluripalem
Au
Puduru
□,Fe,C,Cr,
Am,A,Ch
Nellore
Cu, □,Au
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
Legend
Cu - Copper
Fe - Iron
□ - Lead
Go- Gold
Au- Silver
Bo- Bronze
J- Jasper
A- Agate
Op - Opal
C- Carnelian
L- Lapis Lazuli
B - Bone
Po - Potin
Tu- Turquois
I - Ivory
Co- Coral
Λ – Chert
M- Marble
Ss- Sand stone
+- Shell
#- Soapstone
Fa- Faience
Bl- Bloodstone
Am- amethyst
Ch- Chalcedony
Cr- Crystal
Δ- Rock Crystal
Qz- Quartzite
G- Garnet
P- Pearl
$- Crystalline Quartz

Krishna that flows into the Bay of Bengal, cross Andhra Pradesh (Singh 1971: 851). In the Krishna-Godavari delta along with its adjacent regions the early historical period began in the third–second centuries B.C. Ashokan inscriptions are found here along with the sculptural reliefs at Amaravati. The province is dotted with Buddhist sites, the most famous are Amaravati and Nagarjunakonda. The province witnessed political consolidation under the Satavahanas and the Ikshvakus and participated in trade with the Romans. The well-excavated sites in the Andhra region are Satanikota (Ghosh 1986), Yaleshwaram (Khan 1963), Peddavegi (Sarma 2002), and Nagarjunakonda (Ramachandran 1938, Subramanyam 1975).

Sitewise Distribution Of Manufactured Objects

Chart 16a shows the different raw materials that were used in this region. These are copper, bronze, iron, lead, potin, gold, silver, agate, quartz, opal, bloodstone, carnelian, jade, rock crystal, amethyst, ruby, serpentine, chalcedony, garnet, lapis lazuli, sandstone, marble, quartzite, limestone, steatite, soapstone, shell, coral, faience, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Gold: A goldsmith's shop has been found at Nagarjunakonda from the layers belonging to the Ikshvaku period upto early fourth century A.D. Crucibles, moulds for gold jewellery, touchstone, weights, and hammers were found leading to its identification as a goldsmith's shop. A hoard of coins was also found at the spot (Soundararajan 2006: 131).

Shell: Nagarjunakonda is exceptionally rich in shell objects especially bangles. Excavations revealed wasted materials of shell working. About one thousand shell bangles were recovered from a ditch. The high frequency of occurrence may indicate that shell bangles were manufactured locally (Soundararajan 2006: 431).

Character of Sites and Distribution of Manufactured Objects

There are several urban centers in the Andhra region. Satanikota and Veerapuram in the Kurnool district are two such urban sites. Remains from the Stone Age to the historical period have been found at Satanikota. The very name of the place Satanikota (*Satavahanakota*) suggests that this place was the fort of the Satavahana rulers. A massive fortification with a moat and an elaborate gate complex was

exposed in the excavations. It laid bare traces of a township of the Satavahana period from the first to the third century A.D. (Sarma 2008: 211). Coins and brick built fortification confirm the rule of Satavahanas here. This was also the administrative headquarters of the Satavahana (Ghosh 1986: 13-14). Veerapuram is an ancient site located near the site of the Ashokan edict at Erragudi. The early historical period here evidence is in the form of russet coated painted wares and red polished wares. Coins of Satavahanas, Maharathis and Ikshaku rulers are found here. Also, a group of thirteen temples have been found within an enclosed wall dated to the early centuries A.D. (Sastri, Kasturibai and Prasada Rao 1984: 24). The other sites in the region are, Peddabankur, Dhulikatta, Nelakondapalli, Kudavelli and Nandyal. At Dhulikatta, a Satavahana mud fort and a brick built wall over rubble foundation and few post holes were exposed. A Buddhist stupa was discovered nearby (Sarma 2008: 211). Here, coins of Satavahana rulers and other artifacts were found in excavations. That, this site had contact with the Romans was proved by the find of a few coins of base silver of Augustus Ceasar (Babu 1999: 35). At Nelakondapalli in Khammam district, a stupa built of burnt bricks was exposed. Antiquities of Ikshvaku rulers of third century A.D. were found here (Babu 1999: 47). Sites like Dhulikatta, Kondapur, Satanikota, Peddaabankur, Kyathur, and Veerapuram were well laid out and houses were built on a square plan (Sarma 2008: 197).

The pattern of resource-use at the urban sites here is wide. The use of copper and iron is profuse. The finished products range from bangles, rings, beads, coins, rings, chisels, hooks and arrowheads. The products of iron are mostly tools and implements such as daggers, arrowheads, sickles, chisels, fishhooks, spearheads and so on. Lead and potin coins have also been found. Gold ring is the only artifact of this material.

Amongst the semi-precious stones, beads of carnelian, agate, jasper, opal and bloodstone have found. Opal and bloodstone have been found at Satanikota. Lapis lazuli beads are the other notable raw material used at both the sites of Veerapuram and Satanikota. Sandstone mullers, chert and marble beads are the ordinary stones that have been used. Shell beads and bangles, bone and ivory points and beads are the other raw materials used. Faience beads are found at Veerapuram. Limestone pillars, marble balls, quartzite shaft, sandstone querns, shell beads and ivory needles are the other materials used at this site.

With the exception of Peddabankur and Dhulikatta, the resource usage at these sites is moderate. Objects of copper and iron are numerous at Peddabankur and Dhulikatta. Copper has been mostly used in coins, bangles, rings, bracelets and crucibles and chisels. Iron was more in use and in different forms. The artifacts were mainly tools and agricultural implements such as daggers, arrowheads, sickles, chisels, fishhooks, spearheads and so on. Lead and silver coins have been found at Dhulikatta and Nellakondapalli. Roman gold coins have been found from Kudavelli and Nandyal. Amongst the semi-precious stones, beads of carnelian, agate, jasper and amethyst have been mostly used. Faience beads have been used at Dhulikatta only. Shell and bone beads have been used at most other sites.

Some of the explored sites in the Andhra region with Satavahana period levels are Bharatmunipetapadu, Kasipet, and Rebbaladevapalli and Rayapatnam in Karimnagar district, Dommarandndyal in Cudapah district, Chabole in Kurnool district and Vadaluru in Nizamabad district. These sites yielded Satavahana copper coins, iron slags and pottery of the early historical period (Babu 1999: 20-22, 28).

Nagarjunakonda in Guntur district is a famous Buddhist site. It is also an urban site with a few temple structures. Excavation revealed the discovery of a large *stupa*, four *viharas*, monasteries, a citadel and four phases of a grand fortification belonging to the Ikshvaku period (Ramachandran 1938: 3-4; Sarma 2008: 212; Soundararajan 1954-55: 342). The *chaityagriha* enshrining the stupa had Buddha images within them. The stupa was brick built (Sarma 2008: 217). Yaleshwaram was a prehistoric settlement, which grew into a flourishing city at the time of the Ikshvakus by the third century A.D. Vast and varied remains belonged to the late Satavahanas and Ikshvakus at this site. The remains are mostly of Buddhist complexes (Khan 1963). Brick constructions are noted at this site.The other structural remains include, soakage pits, citadel fortified by walls. Roman contact is evident through the find of a gold coin of Roman emperor Septimus Severius (A.D.193-211) at the site (Sastry 2003: 142). Amaravati in the Guntur district is a well-known Buddhist monastic site. It has a *stupa* belonging to the Satavahana period (IAR 1974-75:5). The excavations exposed secular buildings too besides religious architecture. They are habitational structures from simple huts to sophisticated dwellings. The walls were made of wattle and daub and floors of lime concrete, paved with brick and shale. Storage

tank, cisterns of brick were built within houses (Sarma 2008: 197).Excavations yielded rouletted ware and kaolin painted polished ware as well as Satavahana coins of copper, lead and potin (Babu 1999: 24). The stupa at Amaravati is a *Mahachaitya*. One unique feature is that the dome faced with a number of beautifully sculpted limestone slabs (Singh 2004:249). Kotilingala in Karimnagar district is an ancient mound that revealed the existence of a mud rampart and a stupa with a lime plastered dome and projected *ayaka*. Platform fragments of a *chhatra* contained an inscription dateable to the first century A.D. (IAR 1980-81: 2). The mud rampart and bastions were important structures of the Satavahana period (Sarma 2008: 209). Second century stupa sites have been found at Kesarapalli, Gudivada, Chandravaram and Jaggyapeta. They were built of solid brick with *ayaka* platforms (Sarma 2008: 216). Pishthapura was also a fortified town which revealed association with Buddhism from the third century BC onwards. The stupa here was originally of mud and was replaced by limestone railings of second-first centuries BC. The stupa, *ayaka* platform and *pradakshina patha* were also exposed (Sarma 2008: 214). Phanagiri in the Nalgonda district was a Buddhist site and excavations revealed a mahastupa, stone pillared congregation hall, viharas and other brick structures dated first to the third century A.D. Satavahana and Ikshaku coins were discovered in the cells (IAR 2001-02: 9).

The resource usage at the religious shrines and complexes is similar to the urban sites. The various raw materials used for manufacture of finished products are varied. Copper artifacts such as coins, bangles, wires, talisman, rings, and bell are the various artifacts of copper. Here we find a bronze camphor burner. Roman coins of gold have been found at Yaleshwaram. At Kesarapalle, lapis lazuli beads have been found. Roman coins of gold have been found at Nagarjunakonda. Copper and lead coins are found from Amaravati.

The use of various semi-precious stones such as crystal, beryl, pearl and rock crystal have been found at Amravati. They are in form of caskets, beads and pendants. Also ivory had been used only at Amaravati for pendants ans caskets.

Raw Materials Available Within The Sub-Region

The presence of garnet has already been noted on p.126.

Copper

Cudappah district: Velidendla, Chinnakudala, Bestavaripalle, Vemula and Midipenta (GSI Misc Pub No. 30 1975: 22).

Guntur district: Copper and lead ores associated with calcerous quartz occur in this district (GSI Misc Pub No. 30 1975: 22).

Khamam district: Mailaram area, Dharwar quartz chlorite schists (GSI Misc Pub No. 30 1975: 22).

Kurnool district: Old mines of copper are located in Venkatapuram, Gani, Bastipadu, Gummanikonda and Jonnagiri (GSI Misc Pub No. 30 1975: 23).

Semi-Precious Stones

Numerous reefs and veins of quartz are there in Cumbum formations. These occur at Sattenapalle, Palnad, Nasaraopet and Vinukonda taluks in Kurnool district (Rajagopal 1974: 18). The rocks of the Papaghni series contain conglomerates of sandstones and quartzites. The pebbles mostly consist of veins quartz, jasper, variegated cherts and hametite (Sivashakaranarayana 1970: 15). Quartz occurs widely around the city of Hyderabad. The deposits are best available at Borampet, Bahadurpalle (Prasad Rao 1980: 9-10). In the Guntur district quartzite and quartz veins occur near Kotturu (GSI Misc. Pub no.30 1975: 41).

A Captain Newbold had mentioned that the beds of Krishna, Godavari and Bhima rivers as a good source of agates, jaspers and carnelian pebbles (La Touche 1918: 155). Large quantities of these pebbles were collected from the bed of Godavari near Rajahmundry. Occurence of amethystine quartz in granite has been noted in the neighbourhood of Hyderabad (La Touche 1918: 155).

Gold

Occurrence of gold dust was noted on the bed of Godavari (Ball 1881: 188-9).

Iron

Numerous small occurrences of iron ore (hematite) exist in the Kurnool district. Reasonably good deposits are Ramanallakota-Veldurthy area in Dhone taluk. Here massive and flaky hametite occurs in fault zones in Cuddapah formations (Rajagopal 1974: 15).

Lead and Galena

These are available in the Chelama area in Nandyal taluk there are occurrences of galena. There are several old workings in the area (Rajagopal 1974: 14).

Shell

The coastline on the east is the nearest source.

Ivory

Elephant distribution is not uncommon in the southern Eastern Ghats along dry desidous forests (Sukumar 1993: 13). Moreover, the elaborate depiction of elephants in the sculptures of Udayagiri-Khandagiri caves (Sukumar 2011: 108) indicates the possibility of presence of elephants in some parts of the coastal plain as well.

Steatite

Small deposits occur in and around Muddavaram in Dhone taluk in Kurnool district (Rajagopal 1974: 16).

Sandstone

The Gondwana sandstones are extensively used as building materials in the Kurnool district (Rajagopal 1977: 16).

Marble

Different coloured marbles occur near Rantachinthala in Guntur district (Rajagopal 1977: 16).

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli (Afghanistan) has already been noted (p.31).

GUJARAT

Bloodstone

This occurs near the village of Tankara village in Morvi, twenty miles north of Rajkot (Ball 1881:509).

Epigraphic, Numismatic and Literary Linkages

The links between Maharashtra and the Andhra region is strongly indicated by presence of numismatic evidence of the western Kshtrapa rulers in Andhra whose stronghold was over the Maharashtra region. The silver coins of Western Kshtrapa rulers have been found in hoards from Petluripalem in Guntur district and Yerrinemmapadu in Krishna district in Andhra (Jha and Rajgor 1994: 68). Further, epigraphic evidence strongly shows the control of the Satvahana rulers over the Andhra as well as the Gujarat-Maharashtra region after they defeated the Khatrapa rulers. The Nasik inscription of Gautamiputra Satakarni rejoices the victory of the Satavahanas over Western Kshtrapas.The Satavahanas won over Maharashtra and extended their rule to Asmaka on the Godavari, Suratha (south Kathiawar) (Raychaudhuri 1996: 428, 434-5). As evidence, Satavahana lion type coins have been recovered as far as Gujarat (Shastri 1972: 49). Coins of Yajna Satkarni have been found in Gujarat and silver portrait coins in Saurashtra region (Mirashi 1981:272). The finds of coins substantiate the defeat of Saka chief Nahapana by Gautamiputra Satakarni in the Saurashtra region. Satavahana coins are spread all over Maharashtra region such as Tarhala hoard, Wategaon hoard and Brahmapuri in Vidarbha and Maharashtra region (Datta 1990: 127, 137, 141) and indicate that both Andhra and Maharashtra regions was their stronghold.

The Andhra region was procuring a few resources from outside its boundary. Far off territories as Gujarat were accessed for semi-precious stone as bloodstone. Lapis was most likely obtained from Afghanistan. Several resources were locally available. These were copper, rock crystal, quartz, agate, iron, steatite, soapstone, marble, shell, bone and ivory. The region as seen from its resource-use was in contact with far off provinces mainly towards the west as well.

Andhra Coast

The coastal area of eastern India is wide and vast. Alluvial fillings of the littoral zone comprising some of the largest deltas form the extensive coastal plain (Singh 1971: 932). The region is also known for its association with Buddhism as several such sites are spread along the coast. Some of the Buddhist sites in the coastal regions are Salihundam, Thotlakonda, Gopalapattanam and Bavikonda. The region was under the

Chart 17a

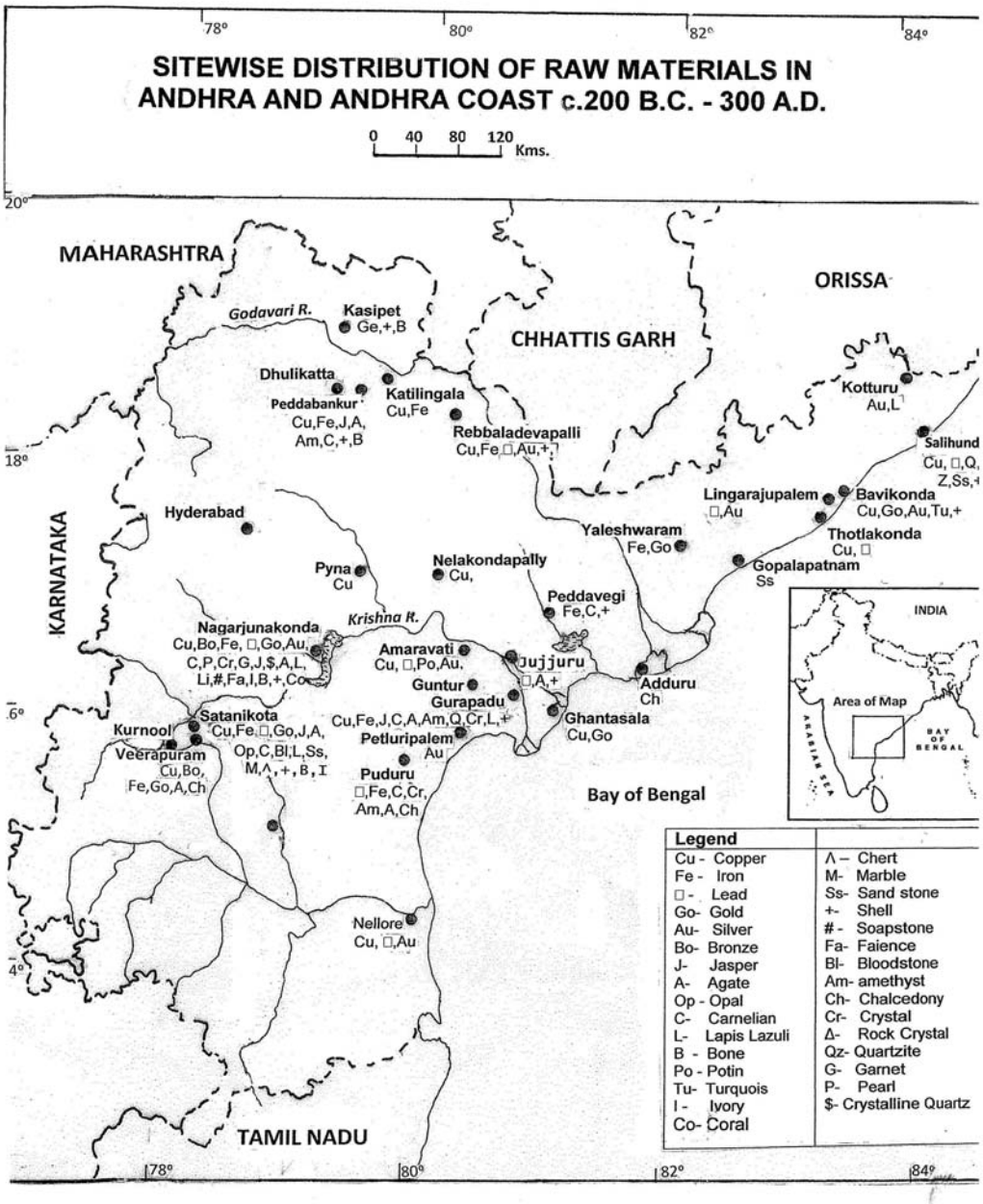
Andhra Coast—c. 200 B.C.—300 A.D.

Raw Materials	*Pyna*	*Petluripalem*	*Nellore*	*Peddavegi*	*Gopalpatnam*	*Jujjuru*	*Adurru*	*Puduru*	*Kotturu*
Copper/Bronze	coin		coins		coins		coins	coins	
Lead/Potin			coins		coins				
Iron				pieces				slag,	implements
Gold									flowers, foils
Silver		coins	coins						
Semi-Precious stone				Carnelian intaglio		Agate beads	fragment of carved Chalce-dony bead	Carnelian, Crystal beads, Amethyst beads, Agate, Chalcedony beads	
Lapis Lazuli									beads
Ordinary stone					Sandstone image				
Shell				bangles		beads, bangles			

Chart 17a (continued)

Raw Materials	*Bavikonda*	*Thotlakonda*	*Lingarajupalem*	*Dharanikota*	*Ghantasala*	*Gurapadu*	*Salihundam*
Copper/Bronze	coins	coins			coins	antimony rods	coins
Iron						objects	
Lead		coins	coins		coins		
Gold	relic caskets				Roman coins		
Silver	relic caskets, beads	coins	Roman coins				
Semi-precious stone	Turquoise beads					Jasper, Carnelian beads, Agate, Amethyst beads, Quartz and Crystal beads	
Lapis Lazuli					beads		
Ordinary Stones					slab, water spout,		querns, muller Quartzite beads
Steatite/Soap-stone	lid, tablet						
Faience							
Ivory	beads			seal			
Coral/Shell						Shell beads	bangles

MAP-17


78°
80°
82°
84°
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
ANDHRA AND ANDHRA COAST c.200 B.C. - 300 A.D.
0 40 80 120 Kms.
20°
18°
16°
14°
MAHARASHTRA
ORISSA
CHHATTIS GARH
KARNATAKA
TAMIL NADU
Bay of Bengal
Godavari R.
Krishna R.
Kasipet
Ge,+,B
Dhulikatta
Peddabankur
Cu,Fe,J,A,
Am,C,+,B
Katilingala
Cu,Fe
Rebbaladevapalli
Cu,Fe□,Au,+
Kotturu
Au,L
Salihund
Cu, □,Q,
Z,Ss,
Lingarajupalem
□,Au
Bavikonda
Cu,Go,Au,Tu,+
Thotlakonda
Cu, □
Gopalapatnam
Ss
Yaleshwaram
Fe,Go
Hyderabad
Pyna
Cu
Nelakondapally
Cu,
Peddavegi
Fe,C,+
Nagarjunakonda
Cu,Bo,Fe, □,Go,Au,
C,P,Cr,G,J,$,A,L,
Li,#,Fa,I,B,+,Co
Amaravati
Cu, □,Po,Au,
Jujjuru
□,A,+
Guntur
Gurapadu
Adduru
Ch
Ghantasala
Cu,Go
Satanikota
Cu,Fe,□,Go,J,A,
Op,C,Bl,L,Ss,
M,Λ,+,B,I
Kurnool
Veerapuram
Cu,Bo,
Fe,Go,A,Ch
Cu,Fe,J,C,A,Am,Q,Cr,L,+
Petluripalem
Au
Puduru
□,Fe,C,Cr,
Am,A,Ch
Nellore
Cu, □,Au
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
Legend
Cu - Copper
Fe - Iron
□ - Lead
Go- Gold
Au- Silver
Bo- Bronze
J- Jasper
A- Agate
Op - Opal
C- Carnelian
L- Lapis Lazuli
B - Bone
Po - Potin
Tu- Turquois
I - Ivory
Co- Coral
Λ – Chert
M- Marble
Ss- Sand stone
+- Shell
- Soapstone
Fa- Faience
Bl- Bloodstone
Am- amethyst
Ch- Chalcedony
Cr- Crystal
Δ- Rock Crystal
Qz- Quartzite
G- Garnet
P- Pearl
$- Crystalline Quartz

Satavahanas and the Iskhvaku rulers in the early centuries A.D. and was noted for its sea bound trade with Southeast Asia.

Sitewise Distribution Of Manufactured Objects

Chart 17a shows the different raw materials used in the region. They are copper, iron, lead, gold, silver, crystal, rock crystal, beryl, pearl, agate, carnelian, amethyst, chalcedony, lapis lazuli, sandstone, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Explorations at Puduru in Nellore district revealed a large quantity of iron slags and virtrous material. This indicates that iron implements were probably locally manufactured (IAR 1994-95:2).

Character of Sites and Distribution of Manufactured Objects

Peddavegi in west Godavari was the renowned capital of Salankayana, Vishnukundin and Chalukya rulers of Andhra desha who ruled from fourth century A.D. (Sarna 2002: 1). It was historically known as Vengi. Huien Tsang mentions the existence of a *stupa* built by Ashoka at Vengipura. A fortified township was revealed in excavations.The gravel fortification was spread over a length of a square kilometer. Brick alignments indicated gateways (IAR 1984-85:7; Sarma 2008: 212). Dhanyakataka or Dharanikota in Guntur district has yielded a coping stone representing outskirts of the city with gate. Houses were surrounded by a brick wall, open courtyard was bounded by two principal towers. A brick rampart was also noticed (Sarma 2008: 210-11). Rouletted ware, coins of Satavahana rulers and an ivory seal of the second-third century A.D. was found in excavations (Babu 1999: 30). Gurapadu in the Guntur district is a Neolithic site with a prominent early historical period level dated between 1500 BC and 400 A.D. The excavations revealed rammed mud floors in this layer. Other cultural materials found here consisted of coins of Satavahana and Ikshvaku rulers from the first century BC to third century A.D. Pottery consisted of well polished red, black and red ware terracotta beads (Maheshwari 2001: 5).

Among the explored sites are, Petluripalem, in Guntur district, Puduru in Nelllore district is locally named as Malayakota or Muniratnapalle and Kotilingala (IAR 1994-95:2; Sarma 2008: 209). Other explored sites include Pyna in East Godavari, Jujjuru

in Krishna and Kotturu in Vishakhapatnam. Kotilingala yielded a mud rampart and other structural activity of the post-Mauryan period (Sarma 2008: 209). Kotturu was a hilltop monastic complex with a stupa and viharas. An inscription of second century BC was recovered from here (Fogelin 2006: 104).

Addurru in east Godavari district is a monastic complex and has a Buddhist *stupa*. The architectural features suggest a date of second-third centuries A.D (IAR 1985-86: 2). It has a raised drum and *ayaka* platforms (Fogelin 2006: 105). Gopalpatnam in Vishakhapatnam district was a Buddhist site where a Chatusala type of *vihara* complex on a hillock called Bubhikonda was revealed in excavations dated first century A.D. (IAR 1990-91: 2). Architectural remains include viharas, votive stupas, cisterns and a main stupa (Fogelin 2006: 104). Salihundam in Srikakulam district was a Buddhist site and was named after a ruler Salivahana Vikramarka of Ujjain. It was under the rule of Satavahanas (Subramanyam 1964: 10). It has a circular chaitya, apsidal chaityas and votive stupas (Fogelin 2006: 106). Sarma (2008: 216) that the mahastupa at Salihundam is of solid brick variety, but lacks the *ayaka* platform. The stupa at Bhattiprolu was also built of solid brick of the wheel shaped paln (Sarma 2008: 215).

Recent excavations in the north coast of Andhra have brought to light sites such as Thotlakonda, Bavikonda and Pavuralakonda. Bavikonda on the Coromondal coast consists of religious as well as secular structures.*Chaityagrihas* and *viharas* and a kitchen cum store complex were unearthed in excavations. Satavahana coins have been discovered here (Prasad 1994: 13). At Thotlakonda, excavations revealed several viharas, chaityas, stupas and other Buddhist remains dated between second century BC and second century A.D. Roman coins alongwith Satavahana coins have also been found at Thotlakonda. Pavuralakonda is a monastery similar in date and plan to the two monasteries above. The sticking feature at Pavuralakonda is large number of rock-cut cisterns (Fogelin 2006: 85, 92, 102). Other monastic complexes in coastal Andhra are, Lingarajupalem (1^{st}-5^{th} c. A.D.), Pithapuram, Timmavaram (c.2^{nd} BC-1^{st} c. A.D.); Kodavalli (c. 2^{nd}-3^{rd} A.D.); Ramatittham (c.1^{st}/2^{nd}- 9^{th} A.D.); Kalingapatnam (c.1^{st} A.D.); Mukhalingam (c.1^{st}-9^{th} A.D.) and Dantapuram (3^{rd} BC-2^{nd} A.D.) (Fogelin 2006: 104-06). Some other monastic sites in this region are, Bheemanipatnam, Palavalasa, Apikonda and Kottur along the east coastal strip (Sarma 2008: 216). The stupa at Ghantasala is also of solid brick with a *pradakshina*

patha around the drum dated to the second century BC. The architecture was typical of Andhra monastic complexs with *ayaka* platforms with the stupa laid on a wheel shaped plan. The railings were highly ornate in design (Sarma 2008: 217). A similar plan of the stupas is noticed at other sites such as Alluru, Gumadidurru, Pedaganjam, and Chandavarnam (Sarma 2008: 217; Babu 1999: 28). At Alluru, an inscription of the second century A.D. was found and four limestone standing images of Buddha were revealed in excavations (Babu 1999: 23). At Chandavarnam in Prakasam district, small votive stupas were found along with coins of Yajna Satsri. The rouletted ware was dated to the Satavahana period (Babu 1999: 28).

The use of metal is in the form of copper antimony rods from Gurapadu in large quantities and iron pieces. Nails, rods and a wedge are some of the iron artifacts which are most common at Veerapuram. The other objects are an intaglio in carnelian and shell bangles. Gold beads are found from Veerapuram. Lead coins of Satavahana rulers have been found at Veerapuram and Salihundam. Amongst semi-precious stones diversity is seen at Veerapuram and Gurapadu. Here, these are beads of agate, chalcedony, crystal, carnelian, jasper and garnet. Rock crystal and carnelian are the other varieties of semi-precious stones used as beads. As a contrast to the urban sites, some of the explored sites have yielded a better variety of resources. Copper and lead coins have been found from Pyna, Nellore and Jujjuru. Only Puduru has produced iron slags and implements. Silver coins have only been found from Petluripalem and Nellore. Gold foils and flowers have been found only from Kotturu.

The use of semi-precious stones, as beads is quite impressive at these explored sites. While Jujjuru has yielded agate beads, Puduru has yielded agate, chalcedony, carnelian, crystal and amethyst beads. Kotturu is another site where lapis lazuli beadswere found apart from Gurapadu in the Guntur district. Other finds at these sites include beads and bangles of shell at Jujjuru.

The resource-use at the religious sites is lesser than the explored sites. Semi-precious stones have been used minimally. Adurru has produced a single chalcedony bead. Gopalpatnam has produced a single sandstone image.

Raw Materials Available Within The Sub-Region

Occurrence of gold has been noted on p.133.

Sandstone

The Gondwana sandstones are extensively used as building materials in the Kurnool district (Rajagopal 1977: 16).

Copper and Lead

Ancient workings exist in Vinukonda taluk near Karempudi. Lodes are located in Dhukonda, Nallakonda, Bandalamottu and Peddagavalakonda all in Guntur district (Rajagopal 1977: 16-17). Old workings are noticed near Garimanipenta at a depth of 60 meters (Rajagopal 1978: 8). Valentine Ball has noted several localities in Nellore district where there are copper ores. Ancient excavations and hills of copper slags prove the extent of early workings (Ball 1881: 241)

Iron

Magnetite quartzites in Ongole taluk have low-grade ore (Rajagopal 1977:17). Hametite is found in villages Mijuri, Atakanithippa, Venadu and Kudrithuppa in Nellore district (Rajagopal 1978: 7).

Beryl

They are obtained from the mica mines in the Guntur district. Important ores are Pallimitta and Lakshminarayan (Rajagopal 1978:9).

Shell

The Andhra coastline on the east is the nearest source.

Ivory

The distribution of elephants is found in the dry deciduous and moist deciduous forests along the Eastern Ghats of Orissa (Sukumar 1993: 15). It is perhaps not unlikely that this population of elephants were also scattered in the Andhra coastal forest cover.

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli (Afghanistan) and amethyst, agate (Andhra) has been noted on p.31 and 133.

Lead and Galena

This has been previously noted on p.134.

TAMIL NADU

Pearl

The Tamil coasts were the nearest source (see p. 31).

KARNATAKA

Crystals

They are associated with pegmatite veins on the east of Mangalur schist patch in Shorapur taluk of the Mysore state (Srisathayan, B.S. 1966:23).

Epigraphic, Numismatic and Literary Linkages

There was regular exchange of resources between the various southern states. Mauryan presence, early historic pottery and Satavahana coins and artifacts help in linking the regions of Karnataka and Andhra. Dharwad has cultural material dated to the Satavahana period (IAR 1962-63: 16; 1992-93:45). Satavahana coins have also been found at Chandravalli, Sannathi, Banahalli and Bramhagiri in Karnataka (IAR1977-78: 27-9; 1986-87:41-2; 1987-88:37-8; 1983-84:42; Thapar 1957:7). Inscription of Jangh-gundu of Pulumavi II (145-46 A.D.) in Adoni Taluk, and Mayakadoni Rock inscription of Pulumavi (225 A.D.) in Bellary district are records of Satavahana rule in the region (Sewell 1932: 14; Sircar 1965: 212). The *Kavya Mimansa* of Rajashekhara testifies to the existence of the Satavahanas and Satakarnis who ruled over Kuntala (the Kanarese districts) before the Kadambas (Raychoudhury 1996: 360). The Chutus who followed the Satavahanas ruled in this region. Inscriptions at Kanaganhalli, a Buddhist site in Karnataka mention names of places as Dhanyakataka in Andhra and other places (Parashar-Sen 2004: 60).

Ptolemy as well as the author of the *Periplus* describes Kolkhoi situated on the sea-coast to the east of Cape Comorin as an emporium of the pearl trade (McCrindle reprint 2000: 58). The *Periplus* further mentions that the Pandya, Kanchipuram and at Karur (Mitchiner 1995: 92, 21, 82). In this regard, the distribution of ceramic industries as roulette ware dated to first-second centuries A.D. links the entire eastern coast of India. These have been found from Tamralipti, Sisupalgarh, Pithapuram, Salihundam, Guntur district to Kancipuram and Korkai on Pandyan coast upto north coast of Sri Lanka (Ray 1989: 44; IAR 1960-61: 1; 1962-63: 12; Fogelin 2006: 106).

The resource procurement of the coastal region of Andhra is largely limited to its own sub-region. The resources that were used in manufacture of objects were mostly obtained locally. Copper was obtained from some of the ancient workings in the Guntur district. Iron ore was also locally obtained from the Nellore district. We find the evidence of manufacture of iron objects at Puduru (Nellore district) along with several iron slags. Besides, sandstones, semi-precious stones such as beryl, bone and ivory were locally available. For a few other resources the Andhra Coast was interacting with the adjoining regions. Agates and chalcedony and amethysts were obtained from the Andhra region. Pearls were probably obtained from coasts of Tamil Nadu. The nearest available source of crystals is Karnataka. Lapis lazuli is the only resource that is obtained from outside the region. The available source is Afghanistan in the northwest of the subcontinent.

On the whole, the Andhra coast was partially dependent on local resources for manufacture of objects. Adjoining regions of Andhra mainland, Karnataka and Tamil Nadu were the other contact regions for obtaining a few other resources. Given the quantity of the manufactured objects, it cannot be definitely said that the Andhra Coast was in touch with far off regions such as Afghanistan directly. The contact could well be dependent on the Andhra mainland. The post-Mauryan period in this region was one of limited contact. Apart from using local resources, the resource-use of the Andhra Coast was restricted to its neighbouring regions only.

Karnataka

Karnataka, in southern India, bordered on the north and north-east by Maharashtra and Goa states, on the east by Andhra Pradesh State, on the south by Tamil Nadu and Kerala states, and on the west by the Arabian Sea. Karnataka has four main physiographic regions: the coastal plains, the hills of the Western Ghats, the undulating Karnataka Plateau in the east, and the northwest (Singh 1971: 791). The Satavahanas built the first state in the Deccan in the post-Mauryan period. In different regions of the south, power was wielded by the chiefs mentioned in the vast *Sangam* literature. The territory is full of Buddhist *stupas* and *viharas* that came up in the Deccan during this period. Some of the important sites of this province are Sannathi in Gulbarga district, Maski in Raichur district, Brahmagiri, Chandravalli in Chitaldurg

Chart 18a
Karnataka---c. 200 B.C.---300 A,D.

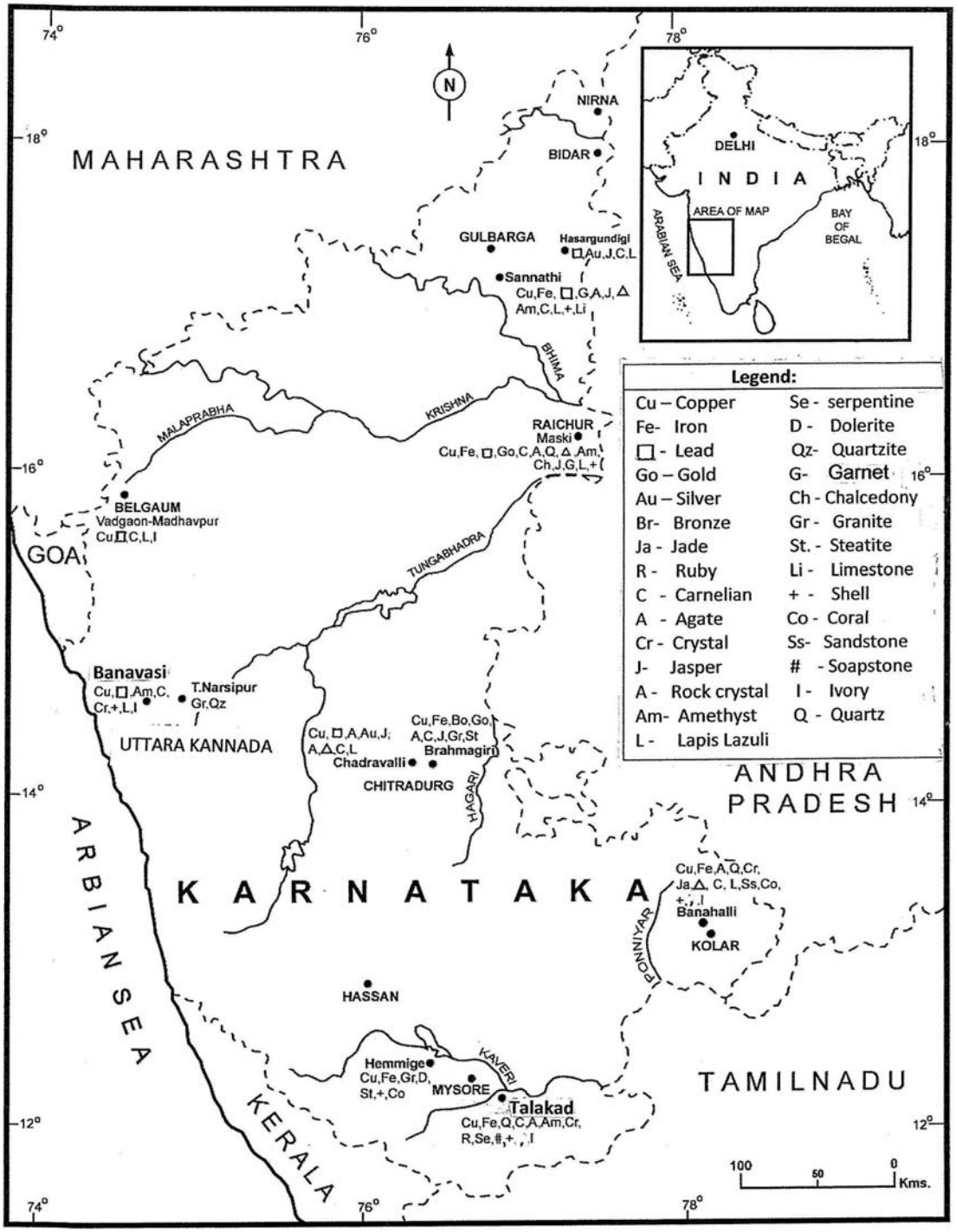
Raw Materials	*Sannathi*	*Maski*	*Vadgaon- Madhavpur*	*Nirna*	*Banavasi*	*Hasargundigi*	*Komaranhalli*
Copper/Bronze	alloy rings	coins,bangles	coins		coins, objects		
Iron	nails,sweing needle	dagger,knife, blades,nails chisel,tanged, arrowhead, dagger blade, sickle blade, vase					arrowheads, axe, knives, rods, vases
Lead/Potin	coins, ear studs	coin	coins		coins coins		
Gold	alloy rings	bead		Roman coins			
Silver						coins	
Semi-Precious stones	Agate,Jasper beads,Rock-Crystal,Ameth-yst,Carnelian beads	Carnelian,Agate, beads,Quartz, Rock-Crystal beads,Amethyst, Chalcedony beads, Jasper, Garnet beads	Carnelian beads		Amethyst, Carnelian, Crystal beads	Jasper, Carnelian beads	
Lapis Lazuli	beads	beads	beads		beads	beads	
Ordinary Stones	Limestone sculptures						
Shell/Coral	bangles, rings, beads	Coral bead, Shell bead, bangles, Conch Shell, finger ring	beads		Coral beads		
Ivory			beads		dice, pin,, comb		

Chart 18a (continued)

Raw Materials	*Hemmige*	*Banahalli*	*T.Narsipur*	*Chandravalli*	*Brahmaagiri*	*Talkad*	*Belgaum*
Copper/Bronze	ring	bangles, beads		coins, beads	Bronze bangles, ring, bracelet, rattle, bell	pipes, knobs, crucibles, buttons	
Iron	chisels,spear-heads,hinge, rod,ring, arrowhead, rod,dagger	nail,blade, spearheads, arrowhead, knife,dagger, axe,sickle, chisel,slag			sickels,knives, swords,wedges, arrowheads, daggers,hooks, boring tools,nails	slag,nails	
Lead/Potin				coins, Potin coins			
Gold					bangles		
Silver				Roman denari			
Semi-Precious stone		Agate, Quartz, beads, Rock- Crystal Carnelian beads, Crystal beads		Jasper, Agate, beads , Rock-Crystal, Carnelian beads	Agate, Carnelian beads, Jasper beads	Quartz, Carnelian beads, Agate, Amethyst beads, Crystal, Ruby beads, Serpentine beads	
Jade		beads					
Lapis Lazuli		beads		beads			
Ordinary Stones	Granite quern,	beads, Sand-stone poun-der	Granite grinding implements, Quartzite grinding implements, Granite querns		trap-Rock pestle,ganite disc		Limestone pillar
Steatite/Soap stone	beads				beads	Soapstone whorl	
Shell/Coral	bangles, beads	bangles, beads				bangle pieces, cowrie, ornaments	
		Coral beads					
Ivory		dice				objects	

MAP-18

SITE-WISE DISTRIBUTION OF RAW MATERIALS IN KARNATAKA
c. 200 B.C. - 300 A.D.



district, Hemmige and Talkad in Mysore district, T.Narsipur and Banavasi in Uttara Kannada district (Howell 1986-89, ed. Parashar-Sen 2004; IAR 1953-54: 39; Wheeler 1947:180-310; Devaraj, Murthy, Kishnamurthy and Swami 1996; Nagaraju and Rao 1974; Sheshadri 1971 and Murthy 1997).

Sitewise Distribution Of Manufactured Objects

Chart 18a shows the different raw materials that were used in this region. These are copper, bronze, iron, lead., potin, gold, silver, agate, quartz, carnelian, jade, rock crystal, amethyst, ruby, serpentine, chalcedony, garnet, lapis lazuli, sandstone, limestone, quartzite, granite, steatite, soapstone, shell, coral, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: One finds a large amount of charcoal, crucibles, fire clay, ash and waste materials at Talakad which suggest a busy activity connected with smelting and forging of metals. Iron slag is found in good quantity. A large broken portion of an earthen jar was found here with fire clay sticking to it. In all probability, there existed a full-fledged foundry/workshop of a metal smith (Devaraja, Narasimhamurthy and Krishnamurthy 1996: 53). Early historic layers at Banahalli in Kolar district revealed a hearth the contents of which were iron slag and ash (IAR 1983-84: 46).

Beads: A large quantity of nodules and waste flakes of amethyst, carnelian and quartz and agate beads in various stages of manufacture have been found from Banavasi (IAR 1995-96: 43).

Coin Mould: A coin mould is found from Banavasi of fine agate and has a groove on top. The mould represented only the reverse of the Roman coin. Another coin mould from Talakad was found with the reverse side of a coin of Augustus and Tiberius near a kiln dated to the first century A.D. This was the first known kiln from the Satavahana levels in Karnataka. This indicated the practice of minting of counterfeit Roman coin at Talakad (Narasimha Murthy 1995: 79-80).

Character of Sites and Distribution of Manufactured Objects

Hemmige, an urban site is located strategically, facilitating traffic between the plains to the north and south of river Kaveri. This played a major role in the development of

the region. Russet coated kaolin painted red ware and black and red ware datable to the early Christian centuries found in excavations (Rao and Nagaraju 1974: 7, 13). Bramhagiri and Chandravalli, in the Chitaldurg district were two megalithic sites. They developed as urban centers under the Satavahanas. Rouletted ware and Roman denari (dated first century A.D.) of Augustus were found from here (Wheeler 1947: 180). At Chandravalli and Brahmagiri, the early historical Andhra culture was marked by brick structures, kaolin painted ware, coins of the Satavahanas and Roman coins and rouletted ware (ed. Kamalakar 2000: 29, 30). Maski has revealed three cultural levels. The second Iron Age megalithic culture from the third to the first centuries BC and then Andhra age dated first to the second centuries A.D. The last phase yielded Satavahana coins and russet coloured pottery (IAR 1953-54: 8). A few brick bats, pottery as rouletted ware and amphorae of Mediterranean origin have been reported from Maski (ed. A.Sundara 1990: 293). Robert Bruce Foote considered T.Narsipur to be an Iron Age site. He had noted several antiquities of that period from the site. The early historical period here began from the first century A.D. (Sheshadri 1971:1-4). The early historic period layers here were highly disturbed and had a few rouletted ware sherds (Kamalakar: 30). Sannathi, located to the south of Gulbarga was an important urban-cum-religious site. This has been discussed among religious sites. Talkad is another urban site of the region inhabited during the early centuries of the Christian era. According to the *Skandapurana*, the place got its name from the two *kiratas* by the name of Tala and Kada. Epigraphs of the early period refer to this place by its Sanskritzed form *Talavanapura*. It is more famous as the capital of the Ganga rulers of the fifth century A.D. (Devaraja, Narasimhamurthy and Krishnamurthy 1996: 2). During the Satavahana period, terracotta representations of Roman coin of Augustus and Tiberius (1st c. A.D.) were found near a kiln. It is an example of the popularity of Roman reperesentations in the region (Narasimhamurthy 1995: 80). On the basis of ceramic evidence of kaolin painted ware, russet coated ware and red slipped ware the early historical period evidence was identified at several sites such as Hallur, Piklihal Aihole and Pattadakal, (ed. Kamalakar 2000: 30,31,32).

The pattern of resource usage at the urban sites is quite substantial. Copper has been mostly used as coins, bangles, rings, bracelets and crucibles and rattles. Iron has been more in use and in different forms. The artifacts are mainly tools and implements such

as daggers, arrowheads, sickles, chisels, fishhooks, spearheads and so on. Lead and potin have also been used as coins. Gold beads and bangles have been found at Maski and Brahmagiri respectively. Silver coins in form of Roman denari have been found at Bramhagiri only.

The various semi-precious stones used in form of beadsand pendants at most urban sites are carnelian, crystal, agate, quartz, garnet, jade, japer, ruby, rock crystal, amethyst, chalcedony and serpentine. Lapis lazuli has been used as beads at a few urban sites such as Maski and Chandravalli. Ordinary stones such as granite and quartzite have been used at urban sites as grinding stones, and disc and quern. A dolerite axe has been found at Hemmige. Steatite soapstone and shell beads and bangles, coral beads and ivory knife handle, pin, beadsand dice are the common usages at these sites.

Some of the other urban sites of this region are Vadgaon-Madhavpur (Belgaum district), Hasargundigi (Gulbarga district), Nirna (Bidar district), Banahalli (Kolar district). Hasargundigi and Ranamandala near Sannathi (ed. Kamalakar) and Udayavara (Ghosh 1991:149) are fortified habitation sites. Hasargundigi revealed in excavations a large circular brick stupa. Architectural and ceramics yielded evidence of early historic habitation from pre-Satavahana to post-Satavahana period. (Parashar-Sen 2004: 141). M.S. Krishnamurthy discovered at Korugadu in Bellary district russet coated ware and bricks and sculptures of the Satavahana period (Kamalakar 2000: 32). Vadgaon-Madhavpur has ancient remains in form of brick structures of Satavahana period, terracottas indicating a township of the early historical period. Here we find mostly residential structures built of brick, soakpits and a mettalled road was also identified here (Sundara 1990: 293). Banavasi revealed apsidal brick structures of the Satavahana period. This was a chaityalaya of the Satavahana period. Roman pottery in form of Samian ware and a soapstone coin mould was found in the excavation from the early historical period (Kamalakar 2000: 31; Narasimha Murthy 1997: 91). Smaller sites such as Hosakere, Somanala, Gonalahal and Jevargi in Raichur district have yielded bricks of Satavahana period and russet coated kaolin painted ware, coins and limestone sculpted slabs respectively (Kamalakar 2000: 32). Roman coins have been reported from Akki Alur in Dharwar district along with coins of Satavahanas (ed. Murthy, Suresh, Pooncha and Basavraj 2001: 11). Roman coins and artifacts are reported from Yashwanthpura in

Bangalore district and Mysore and Kartyal of Bijapur district dated 23 BC to 51 A.D. (Swamy 2001: 99). From Herakal in the Bijapur region, early historical period yielded polished red sprinkler water spouts which suggest contact with the Roman Empire. Ptolemy mentioned Badami, Pattadkal, Chimallagi and Hipargi as commercial centres of first-second centuries A.D. (Badiger 2001: 11).

Copper usage is very limited in the form of coins, bangles and beads. With the exception of Banahalli we do not find the wide use of iron at any of these sites. The products are mostly tools and implements such as daggers, arrowheads, sickles, chisels, fishhooks, spearheads and so on. That Banahalli had a workshop for smelting of iron substantiates the variety of iron artifacts here. Lead coins are found at Vadgaon-Madhavpur and Hasargundigi. But Roman gold coins are only found at Nirna. Similarly, silver coins are also found only at Hasargundigi. Notably, lapis lazuli beads are found at some of these sites. These are Vadgaon-Madhavpur, Hasargundigi and Banahalli. Sandstone pounder is the only object of stone at these sites. Beads of shell, bone and ivory are the other artifacts found at a few of these sites.

The religious shrines and complexes in the region are Sannathi and Banavasi. The site of Sannathi mainly flourished during the Satavahana period and is a religious cum urban site. Inscriptions and coins of the rulers show that the site belonged to the Satavahana period. On the surface, we find remains of brick fortification and inside was found a raised citadel. Surface finds suggest that the other habitations were of Buddhist affiliation. Two of these structures were identified as stupas and many relief slabs were also discovered (Howell 1986-89:1). The excavation revealed a portion of a brick structural complex with series of cells on the mound dated to second-third centuries A.D. (Parashar-Sen 2004: 140). Banavasi in north Kanara is the ancient Vaijanyanti was an important city under the Satavahanas and the capital of Kadambas. Brick fortification was found surrounded by a moat. The mound was said to contain a *chaitya* structure. It is probably one of the largest brick chaityas of the Satavahana period in South India (Nagarjuna Rao 1978:27-28). Kanaganhalli, near Sannati in Gulbarga district is marked by a Buddhist stupa. Excavations revealed the remains of a massive stupa, many brick built structures in the form of *chaityagriha* and votive stupas were brought to light. Sculptured veneering slabs, members of railings, pillars, capitals, Buddha padas, sculptures of yakshas and

images of the Buddha were found from here. The excavation also exposed part of a possible monastic complex to the north west of the main stupa. Antiquities such as lead coins bear names of Satavahana king like Satakarni, century A.D. The stupa at Kanaganhalli was referred to as *Mahachaitya* and is datable to the first to the third century A.D. (Parashar-Sen 2004: 142-3). Other centres of Buddhism in Karnataka in the early centuries A.D. were, Hampi in the Bellary district, Togarasi in the Shikarpur district in Shimoga (Sarma and Vara Prasada Rao 1993). Buddhist stucco heads were recovered from Mahanavamidibba at Hampi of first century A.D. Also, the limestone panels in bas-relief here depicted anecdoted from the life of the Buddha and Jatakas (Sarma and Vara Prasada Rao 1993: 109). At Togarasi in Shikarpur district in Shimoga, a stucco head of the Buddha and pillar shaft with standing Buddha indicated the Mahayana influence during second-third centuries A.D. The relief figures were of typical Amravati style (Sarma and Vara Prasada Rao 1993: 110).

Besides the regular usage of copper, iron and lead, the only gold object found is an alloy ring at Sannathi. Semi-precious stone as carnelian, agate, amethyst, jasper and crystal are found as beads at both these sites. However lapis lazuli beads are found at both these religious sites situated in north Kanara. Limestone sculptures are found at Sannathi. Shell and ivory beads, dice and comb are the other artifacts found here.

Raw Materials Available Within The Sub-Region

Gold

Gold mines rest in the rich reef on the Kolar field at Mysore. There are numerous native workings of unknown age (I.G.I. 1908:141). Four ancient workings are found southeast of Ettimahatti in Bellary district. It consists of adits, drives and old slopes (Ziauddin and Narayanswami 1974: 102)

Iron

The most abundant iron ores occur in Dharwad series as in Salem district and Sandhur state in in Bellary district in southern India (I.G.I. 1908:144)

Copper

Bellary has ancient copper mines (Ball 1881:244). Moderate sized deposits are located at Chitradurga and Kalyadi in Hasan district (Kamnath1980: 778).

Lead and Silver

Bellary district: There are ancient mines such as Sandhur hills in Bellary district.Lumps of galena were found at Metri, northwest of Bellary (Wadia 1966: 117).

Chitradurg district: Galena is reported from Gonurgollarhatti, Ingladahalu, Kunchiganahalu and Kurubaramaradikere in the distrit (GSI Misc Pub No.30 1974: 20).

Shimoga district: Banavalli and Karagevalli (GSI Misc Pub No.30 1974: 20).

Semi-Precious Stones

They are found in the Deccan trap cavities near Dharwad and Bijawar districts (Brown 1936: 300). Agates are found north of Yanegundi and Burgapally in Yadgir taluk below the Deccan trap. Within the veins of rocks at Malavanaghatta in Bijapur district opal and chalcedony are known to occur (Radhakrishnan 1996: 209). Jasper variety is found near Thimmalapura in Sandur taluk of Bellary district (Wadia 1966: 160). Deccan Traps exposed in northern district of Karnataka provide wide variety of quartz, agate, chalcedony of different shades and colour (Radhakrishna 1996: 209). Crystal quartz of the transparent variety occurs in parts of Madhugiri taluk in Tumkur district (GSI Misc Pub No.30 1994: 16). Crystal is associated with pegmatite veins in Mangalore schist in Shorapur Taluk (Sri Sathyan 1966: 22-23).

Soapstone

Patches of rocks occur near Puttur and Kadaba on Subramanya Road (Gazt. of India: South Kanara District 1973: 15).

Ruby

This occurs in the mica chlorite schist near Subramanya and Gundia in Sullia taluk (*Gazt. of India:* South Kanara District 1973: 14).

Green Quartzite

A rare occurrence of this is found with flakes of mica from Nuggihalli schist belt in Hasan district. In the Bellary district, Nemaballu, Ghattihosahalli in Chitaldurg district, Tivadhalli, Belvadi, Bettadbidu in Hasan district, and Mallur, Hunasehalli in Mysore district also reports occurrences of green quartzite (Radhakrishnan 1996: 194).

Garnets

Pink garnet is widely distributed in the state near Bherya, Krishnajapura and Chattanahalli in Mysore district (GSI Misc Pub No.30 1974: 15).

Limestone

Massive limestone beds occur at Bijapur centered on Bagalkot area and Lokapur and Kaladgi. Bhima group formations are found in Gulbarga district (GSI Misc Pub No.30 1994: 20-21; Radhakrishna 1996: 349).

Raw Materials Available Outside the Sub-Region

The presence of sandstone and steatite (central India), and lapis lazuli (Afghanistan) has already been noted on p.109 and 31.

CENTRAL INDIA

Dolemite

This is available among the Bijawar formation (Srivastava, P.N. 1968: 18).

Epigraphic, Numismatic and Literary Linkages

The Satavahanas ruled a vast area in the Deccan. It included several parts of Maharashtra, Karnataka, Andhra and advanced as far as south Gujarat (Raychaudhury 1996: 434-5). Satavahana coins and artifacts are found at Tripuri, Malhar (IAR 1967-68:23; 1977-78:31).The Mayakadoni Rock Inscription of Pulumavi in Bellary district, and coin hoards from Banavasi, Vadgaon-Madhavpur and Hipargi indicate their extent as far as north Karnataka (Sircar 1965: 212; ed. Devaraj 1995: 79).

Inscriptions at Kanaganhalli, a Buddhist site, had names of places including Dhanyakataka in Andhra, Eran in central region, Isila, Kopana, Kotura and Himalaya. Apparently, there was cultural contact between the far flung Buddhist sites irrespective of political boundaries (Parashar-Sen 2004: 60). The entire region of central India, Andhra and Maharashtra is dotted with famous Buddhist monastic sites and the donative records found at these sites prove the extent of mobility beyond political boundaries.

The region of Karnataka was a resource region. Several of the raw materials were available within the territorysuch as gold, iron, copper, lead, silver, and limestone. The Deccan trap cavities bodering the region has a wide variety of semi-precious

stones. These were mostly the varieties of agate, chalcedony, crystals and jasper. Resources that were possibly procured from outside were sandstone, steatite, dolemite that were obtained from the Vindhyan region along the Deccan trap. Raw materials such as Lapis lazuli were most likely obtained from Afghanistan.

Tamil Nadu

To the north of Tamil Nadu lie the Nilgiri Hills, to the west lie the Western Ghats and in the south, the Cardomom, Anamalai, and Palani hills. East of the hills lay the plains and the flat alluvial coast, with deltas at the mouths of the major rivers. Cauvery is the most important river in the state (Singh 1971:851). Megalithic sites are found in the Thanjavur, South Arcot, North Arcot, Chingleput, Tirunelvelli, Salem, Coimbatore and Madurai districts (IAR 1983-84:78-170; 1980-81:65; 1979-80:68; 1968-69:32; 1965-66:22; 1962-63:13; 1957-58:38). Cholas and Pandyas are the two kingdoms mentioned in the Ashokan edicts. The earliest known Tamil literature also refers clearly to these two kingdoms. The well- excavated sites in this region are Arikamedu, (Wheeler, Ghosh and Krishnadeva 1946), Kaveripattinam (Soundara Rajan 1994), KaraikA.D.u, Kanchipuram and so on.

Sitewise Distribution Of Manufactured Objects

Chart 19a shows the different raw materials used in the region. They are copper, bronze, iron, lead, gold, silver, agate, quartz, carnelian, amethyst, chalcedony, rock crystal, marble, steatite, soapstone, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Bead Making: About two hundred beads were found in excavation at Arikamedu along with unfinished ones and fragments of semi-precious stones. It is evident that beads were manufactured on a large scale at Arikamedu (Wheeler, Ghosh and Krishnadeva 1946: 95). However, excavators have identified two mineral varieties namely, quartz and garnet varieties of semi-precious stones that were locally manufactured. Chipped roughout, flakes and chunks of carnelian have been recovered (Begley 2004: 479, 493).

Unfinished, undrilled and unpolished beads were excavated in large quantities from Kodumanal in Coimbatore district. The materials were quartz, carnelian, sapphire,

Chart 19a
Tamil Nadu—c. 200 B.C.---300 A.D.

Raw Materials	*Tikkampuliyur*	*Alagarai*	*Kaveripattinam*	*Alagankulam*	*Karikadu*	*Kanchipuram*
Copper/Bronze	bangles,rings, antimony rods, broken pieces	toe-rings, rods	beads	Roman coins	pendant	coins, objects
Iron	chisel head,spike, ring,blade,rod, knife blade,barbed arrowhead	knives, daggers, arrowheads			pieces	objects,arrowheads, points
Semi-Precious stone		Carnelian beads, Crystal bead Chalcedony	Agate, Jasper, Carnelian beads, Aquamarine	Agate, Jasper beads, Crystal, Chalcedony beads	Crystal, Jasper beads, Agate, Amethyst beads beads ,Quartz, Carnelian beads	Carnelian, Agate beads, Crystal
Ordinary Stone		ball				
Shell/Coral		bangle pieces	Coral beads	beads	bangles	bangles
Steatite/Soapstone			Soapstone beads, Steatite beads			

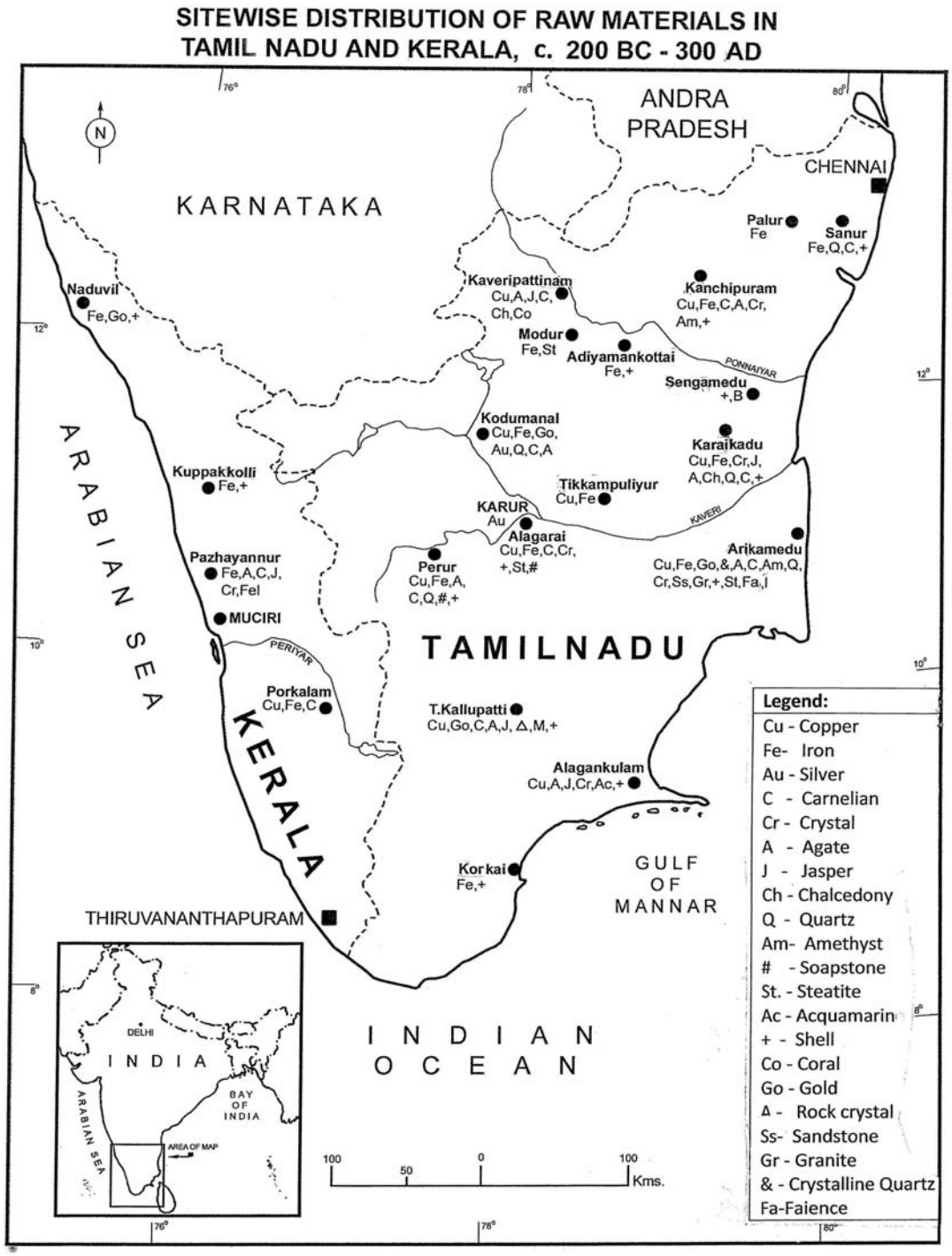
Chart 19a (continued)

Raw Materials	*Sengamedu*	*Palur*	*Kadattur*	*Karur*	*Perur*	*Modur*	*Korkai*
Copper/Bronze					bead		
Iron		chisels, nails, slag			arrowhead, axe, sickle, slag	arrowheads, nails, handle of sickle, knife	nails
Silver			coins	coins			
Semi-Precious Stone				beads	Agate, Carnelian beads, Quartz beads		beads
Soapstone/Steatite					beads	Steatite bead/ pendant	
Shell/	hair pins, bangle pieces				bangle pieces		beads bangle, pieces

Chart 19a (continued)

Raw Materials	*T.Kallupatti*	*Appukallu*	*Adiyamanakottai*	*Chennai*	*Sanur*	*Kodumanal*	*Arikamedu*
Copper/Bronze	coins					spoons, bowls, strainer	rattle, coin
Iron		objects	nails, beads, knives, blades	slag	spear, bar, tanged knife, hook,spear-head, sickle arrowhead, handle, blade, dagger	swords, arrowheads, hilt lid, knob, stirrups	rings, blade, nails, lumps
Gold	micro beads	ornaments				rings, beads	beads, part of necklace
Silver						bangles, rings	
Semi-Precious Stones	Carnelian, Agate, beads, Jasper, Rock-Crystal beads			quartz beads	Quartz ball, Carnelian beads	Quartz, Carnelian beads, Agate beads	Crystalline Quartz beads, ring, Agate beads, Carnelian, Amethyst beads, Quartz intaglio, Crystal ring
Ordinary Stone	Marble, miniature figure, weights, sling balls				balls, pestles, querns, whetstone		Sandstone object, grinding stone, Granite, Sandstone pestle, celt
Shell	bangles	objects	bangles		Conch Shell, discs, beads		beads, bangles, ear-ornament, pieces
Steatite/Soapstone							knob of casket
Faience							beads
Ivory							piece, fragment of handle

MAP-19


SITEWISE DISTRIBUTION OF RAW MATERIALS IN
TAMIL NADU AND KERALA, c. 200 BC - 300 AD
ANDRA PRADESH
CHENNAI
KARNATAKA
Palur
Fe
Sanur
Fe,Q,C,+
Naduvil
Fe,Go,+
Kaveripattinam
Cu,A,J,C,
Ch,Co
Kanchipuram
Cu,Fe,C,A,Cr,
Am,+
Modur
Fe,St
Adiyamankottai
Fe,+
PONNAIYAR
Sengamedu
+,B
Kodumanal
Cu,Fe,Go,
Au,Q,C,A
Karaikadu
Cu,Fe,Cr,J,
A,Ch,Q,C,+
Kuppakkolli
Fe,+
Tikkampuliyur
Cu,Fe
KARUR
Au
KAVERI
Alagarai
Cu,Fe,C,Cr,
+,St,#
Arikamedu
Cu,Fe,Go,&,A,C,Am,Q,
Cr,Ss,Gr,+,St,Fa,I
Pazhayannur
Fe,A,C,J,
Cr,Fel
Perur
Cu,Fe,A,
C,Q,#,+
MUCIRI
ARABIAN SEA
PERIYAR
TAMILNADU
Porkalam
Cu,Fe,C
T.Kallupatti
Cu,Go,C,A,J,Δ,M,+
KERALA
Alagankulam
Cu,A,J,Cr,Ac,+
Korkai
Fe,+
GULF
OF
MANNAR
THIRUVANANTHAPURAM
INDIAN
OCEAN
DELHI
INDIA
BAY
OF
INDIA
ARABIAN SEA
AREA OF MAP
100 50 0 100
Kms.
Legend:
Cu - Copper
Fe- Iron
Au - Silver
C - Carnelian
Cr - Crystal
A - Agate
J - Jasper
Ch - Chalcedony
Q - Quartz
Am- Amethyst
- Soapstone
St. - Steatite
Ac - Acquamarin
+ - Shell
Co - Coral
Go - Gold
Δ - Rock crystal
Ss- Sandstone
Gr - Granite
& - Crystalline Quartz
Fa-Faience

agate, jasper, beryl, garnet, lapis lazuli and soapstone (Rajan 1990:97). Semi-precious stones of different kinds such as crystal, chalcedony, jasper, agate and carnelian have been found in various stages of manufacture from Karaikadu in south Pennar basin dated first-second centuries A.D. (Ramachandran 1980: 111).

Iron: A number of shapeless lumps of iron were found almost everywhere at Arikamedu along with many finished objects. (Begley 2004: 102). Numerous lumps of iron slag were found scattered in an hundred square meter area on the mound at Kodumanal. The base of a furnace along with slag was discovered here. A large oval shaped furnace surrounded by a number of small furnaces was exposed. Vitrified crucibles were collected from here (Rajan 1990:97-98). At Perur, iron objects were collected along with ore and slag which showed that iron smelting was carried on here (Shetty 2003: 22). Two large furnaces and nine cup shaped crucibles were found at Modur in Tirunelvelli district. Thick walled cruicibles and residue of metal adhering to the crucible suggest their use in smelting of iron (ed. Sridhar 2005: 39). At Gutturmalai Guttur in Dharmapuri district several pieces of terracotta pipes were found with iron encrustrations and a large quantity of slag. The trough-like objects might have served as furnaces for iron smelting in the megalithic as well as early historic period (IAR 1982-83: 72).

Shell: The post-Arrentine layers yielded a very large number of sawn conch shells with unfinished bangles and ear ornaments at Arikamedu (Wheeler, Ghosh and Krishnadeva 1946: 108).

Character of Sites and Distribution of Manufactured Objects

The urban sites in the region are Kaveripattinam, Arikamedu, Kodumanal and Karaikadu. Kaveripattinam or Pumpuhar is the celebrated port town of the Sangam Cholas in Thanjavur district. It is classified by Classical geographers as one of the most outstanding port cities of the Kaveri delta on the Coromondal coast (Soundara Rajan 1994: 8). The twin epics *Silappadikaram* and *Manimekalai* are centered on the city of Pumpuhar. The Classical geographers speak of this city as the most outstanding port cities of the Kaveri delta on the Coromandel Coast (Rajan 1994: 8). Excavations revealed remains from the early historical period to the early medieval period. In the vicinity, are several sites with significant structural remains of this

period. Kalaiyur, a neighbouring village revealed a massive brick platform; Vanagiri digging brought out a brick built-inlet channel and a partially exposed urban bund possibly serving as a water reservoir. Rouletted ware was found here dated to the first-second century A.D. Significant was the discovery of a brick built vihara and Buddhist temple at Pallavanesvaram (Ramachandran 1980: 121-3; Ray 2003:201). Uraiyur was the capital of the Sangam Cholas. The layers dated to early centuries A.D. yielded rammed floors with post holes as structural ruins. Structures can be seen in burnt bricks that speak of the prosperity of the city (Ramachandran 1980: 119,126).

Arikamedu is another important urban center of the first second centuries A.D. The *Periplus* and *Ptolemy* speak of Arikamedu as a trading station with the west. It is the most well known trading ports with the Roman Empire in the early centuries A.D. The presence of Arrentine ware, Roman gems and amphorae amply substantiate this trade relation (Wheeler, Ghosh and Krishnadeva 1946: 17). Besides, eighteen potsherds bearing Brahmi inscriptions dated 1^{st}-2^{nd} century A.D. have been found. Excavations also revealed a big structure and two ring wells. The site yielded varities of semi-precious stone beads indicating local manufacture during this period (Ramachandran 1980: 108, 110). Bead making featured as a prominent industry of Arikamedu in the early centuries A.D. (Begley 2004: 447). Karaikadu in South Arcot district was an Indo-Roman trading station on the Coromandal Coast (IAR 1966-67: 21). Though no regular structures have been found, pottery of different varieties has been recovered in excavations. These are black and red ware; red slipped ware, and rouletted ware and so on. Beads of different varieties in different stages of manufacture have also been recovered from levels belonging to early centuries A.D. (Ramachandran 1980: 111; Rajan 2009: 22). At Karukkakurichi, a site in the Kaveri river valley, about five hundred and one gold coins of Roman emperors Augustus to Vespasianus were discovered here (Rajan 2009: 41). Korkai, a famous port of the Pandyas, revealed brick structures, soakage jars, ring wells and inscribed potsherds of second century B.C. to second century A.D. Pearl oysters in excavations were found in the excavations testify its importance as a centre for pearl fishery (Sridhar 2004: 48, 56). At Uttamapuram and Gudalur in the Vagai river valley, a Roman coin hoard and silver Augustus coin were found (Rajan 2009: 45). Kodumanal in the Erode district was an important manufacturing centre of the early historical period. Its

ancient name was Kodumanam. Excavations exposed habitation mound belonging to the Iron Age and early historical period. Red ware, rouletted ware, Arrentine ware, grafitti, storage jars and crucibles of second century A.D. were also found (Rajan 1994: 25). Karur was an important trading centre of the early historic period famous for Indo-Roman trade. Excavations revealed a habitation mound, brick structures, rouletted ware, Roman coins of Augustus and Tiberius, Sangam Cera silver coins and Tamil Brahmi inscriptions (Rajan 2000: 154-55). Alagankulam in Ramanathapuram district was an important Indo-Roman trading centre dated to c.500 B.C- 1200 A.D. A good number of of Roman coins from early Christian centuries to as late as c.500 A.D. were found here (ed. Kamalakar 2000: 66). Tamil Brahmi inscriptions found at Alagankulam are dated from third century BC to the first century A.D. (Rajan 2009: 54-55). The early historical period at Alagankulam was marked by red ware, amphorae pieces, stamped sherds and rouletted ware with ship symbol (ed. Sridhar 2005: 9-10). Habitation in the early historical period was noted at the small mound of Kottaimedu surrounded by a brick wall (ed. Sridhar 2005: 8).

The resource usage at the urban sites is limited. Copper artifacts in the form of coins, pendants and rattle are very few. Alagankulam has yielded copper coins of Roman rulers. Iron too is not widely used. The artifacts are mostly swords, hilt, rings, nails and lumps. Gold artifacts such as rings and beads and silver bangles and rings are only found at Kodumanal and Arikamedu. Semi-precious stones such as carnelian, agate, crystal, quartz, chalcedony and jasper beadsare found in large numbers at the urban sites. Aquamarine has been used only at Alagankulam. Sandstone pestles, shell beads and bangles, steatite casket lid, faience beads, bone beads and ivory pieces are found at Arikamedu.

Amongst other sites, Alagarai in the lower Kaveri valley is one site, which according to local tradition, is named so on account of its having served as an embankment to a large sheet of water (Mahalingam 1970: 63). At Sengamedu in south Arcot district terracotta ringwells, rouletted ware of Roman origin were found. Terracotta ring wells were exposed in the excavations. No other structural activity was noted at the site (Ramachandran 1980: 105). T.Kallupatti in Madurai district has a continuous habitation in the early historical period. Earth floors and postholes were found (IAR 1976-77:46-7). The other sites in this category are Tikkampuliyur, Appukallu,

Adiyamanakottai, and Perur (Ramachandran 1980; Mahalingam 1970; Rajan 2009; IAR 1979-80: 70; 1980-81: 65; 1981-82: 62-63; Shetty 2003). Tikkampuliyur in Period I, dated third century BC to fourth century A.D. yielded megalith black and red ware and russet coated pottery in abundance. Terracotta objects were also found (Ramachandran 1980: 114). Adiyamanakottai has yielded early historic habitation mound, brick structures and artifacts of this period (IAR 1980-81: 65; 1981-82: 62-63). Excavation at Perur in the Coimbatore district revealed a continued habitation from the third century BC to ninth century A.D. Flooring paved with mud bricks was found in the excavations in the early historical period besides other artifacts (Shetty 2003: 17-18). At Modur in the Dharmapuri district, a megalithic period has been dated from 1000 BC to 500 A.D. Besides the megalithic pottery, the site has evidence of iron smelting along with several objects of iron. A large number of burials were found (ed. Sridhar 2005: 10, 39). Mangudi in Tirunelvelli district revealed inscribed potsherds in Tamil Brahmi from the early historical period dated third century BC to third century A.D. Terracotta objects were found in considerable numbers (Shetty 2003: 51, 60, 61). Nattamedu in South Arcot district has yielded sherds of rouletted ware and semi-precious stones (IAR 1965-66: 25). At Palur in Kanchipuram district, iron smelting activity was noted in form of slags and furnace. Rouletted ware was found at this site (IAR 2001-02: 232). Adichannallur in the Tamiraparni river valley has yielded several bronze and gold objects (Rajan 2009: 57). Adiyamanakottai in the Dharmapuri district was called Takadur in ancient times. The Iron Age habitation mound revealed brick structures, beads and bangles of shell and terracotta; Kadattur and Mallapadi had early historic habitation mounds and terracottas an silver coins were found here (Rajan 1997: 128, 141, 144). Poruntal in the Dindugal district has an early historic habitation mound. Here, brick structures along with bead making industry were noted (Rajan 2009: 180). Thondi was a port town of the Sangam period but trial excavations revealed pottery of later periods (ed. Sridhar 2004: 44). Kovalanpottal in south Madurai was an ancient town of third century BC. The Sangam epics *Silappadikaram* describes the town in detail (ed. Sridhar 2004: 29).

Sites such as Anaimalai, Pollachi and Budhinattam in the Coimbatore district have yielded Roman coins in the early historic period, the latter site yielded a hoard of silver coins of Augustus and Tiberius (Rajan 2009: 88, 92). Other sites with remains of the early

historical period are scattered throughout the area. They are Gudimangalam, Kanjapali, Kasilingapalayam (Rajan 1997: 62), Kopvipalayam, Vellalur in Coimbatore district, Nallur and Palayapattinam, (Rajan 2009: 62, 95, 102, 124,). Maligaimedu (IAR 1999-2000: 147-48) in Cuddalore district has a habitation mound of the early historic period and red ware pottery. Kadattur, Mallapadi, in Dharmapuri district, Ambalikkai, Kulipatti, Manur, in Dindugal district, Kottanakkani, Kundadam, Pungaturai, Vellakoil in Erode district, Perumbair (Rao 1972: 121-122), Pilandikuppam (IAR 1990-91: 65) in Kanchipuram district are some of the other eary historic sites (Rajan 1997: 141, 168,170,206, 212, 224, 234).

The use of different resources is substantial at all the above mentioned sites. The number of artifacts in comparison to the urban sites is somewhat more in number. Tikkampuliyur has a good number of copper and iron artifacts. Micro beads of gold are found at T. Kallupatti, and Appukallu is the only other site where gold ornaments have been found. The use of agate, carnelian and crystal is seen as beads. A miniature figure of marble is only found at T.Kallupatti. Soapstone and steatite beads have been found only at Alagarai. Therefore in terms of resource usage, the small sites too have yielded artifacts of a few raw materials that have not been used at the urban sites.

Some of the early historic period Jain centres have been found in the Tamil land. They are, Tirrupattiripuliur in Cuddalore district whose ancient name was Tirruppapuliyur, Aivarmalai in Dindugal district, Dharapuram in Erode district, Aiyyarmalai , Pukalur, Tiruparankuram in Karur district and Tirumalai, Uttamapuram in Salem district (Rajan 2009: 167,198, 265,286, 308, 426, 448).

Kanchipuram was the famous capital of the early Pallavas. This city figures prominently in Sanskrit literature, Tamil inscriptions and even in accounts of foreign travellers (Puri 1966: 31). In the early historical period, the site exposed four courses of baked brick structures forming part of a Buddhist establishment, black and red ware, copper coins of Satavahanas of second century A.D. and terracotta goddess figurines (Ramachandran 1980: 93-5). Remains of Buddhist shrine and chamber along with inscribed potsherds bearing name of Buddhist monk were found. Roman amphorae and rouletted ware were found here (IAR 1970-71: 32; 1962-63: 12). At this religious complex site the raw materials used are few. Besides a few artifacts of copper and iron, amethyst is the only semi-precious stone that has been used.

Raw Materials Available Within The Sub-Region

Gold

Gold is known to exist in the following areas:-

Madura district: In Palakanuth gold was worked out of granite rocks and in sands of the Veigei River from crystalline rocks of Palani hills (Ball 1881: 179).

Salem district: There is a gold mine are there at Suttergul near Pangumpilly. Gold was found at the base of a hill Kanjah Mallia (Ball 1881: 179).

Silver

Kudapah galena silver is known to exist in native state and in cubical crystals of gold at Madras. Pliny mentioned the occurrence of silver with gold in mines (Ball 1881: 231-2).

Copper

Traces of copper ores have occurrences in quantifiable degrees in the old Madras Presidency. It was found in Trichinopally (Ball 1881: 241).

Rock Crystal

Vellum lapidaries in Tanjore district have skilled workers in different varieties of rock crystal such as ordinary quartz, smoky quartz and amethyst. Most of the sources of these were Cuddalore conglomerates (Ball 1881: 502).

Aquamarine

Aquamarine crystals from Kangiam and Padiyur in Coimbatore are known to exist (Ball 1881: 520).

Iron

Ball noted the existence of iron deposits in Salem district of Madras (Brown 1936: 112). Hametite found near Kottampatti in Melur taluk and some parts of laterite rocks in Madurai district (Baliga 1960: 8).

Steatite/Soapstone

This occurs in Jogipalli in Nellore and Salem district (Brown 1936: 283).

Sandstone

This occurs near Vallam and Tanjore (Baliga 1957: 6-7).

Marble

Occurences have been noted by several writers of 19th century near Madhukarai, south of Coimbatore of a band of crystalline limestone which would form valuable marble. At Trichinopoly a band of calcerous grit occurs between Vayalapadde, Naivati and Mutum (La Touche 1918: 49, 53).

Shell and Ivory

The proximity of the region to the sea makes the availability of shells very natural. The density of elephant population in Bandipur-Mudumallai is one of the highest in India (Sukumar 1993: 15). Besides the Sangam anthologies have heavy references to the elephant and its use by the ruling dynasties (Sukumar 2011: 131).

Raw Materials Available Outside the Sub-Region

The presence of agate and all forms of chalcedonic silica such as quartz, chert, carnelian and jasper (Karnataka) has already been noted (p.147)

Epigraphic, Numismatic and Literary Linkages

The early Jain inscriptions, dated third century BC to first century A.D. ,in the Tamil country around Madurai, the Pandyan capital show a clear affinity with the Karnataka region. Kannada personal names and expressions are found in the cave inscriptions at Sittannavasalin Pudukkottai district (c.1st BC) and Tirrupparankunram (c.1st A.D.). It points to the fact that Karnataka was the route through which Jainism reached the Tamil country. Sangam poems mention that Jain monasteries existed in cities like Kaveripattinam and Madurai during the early centuries A.D. (Mahadevan 2003: 135).

The Tamil land was a flourishing centre in the post-Mauryan period. We notice a range of manufacturing activities at Arikamedu and Kodumanal such as bead making, iron smelting, shell cutting and work on semi-precious stones. The region was obtaining most of the raw materials such as gold, silver, copper, iron and semi-precious stones such as rock crystal, quartz, amethyst and acquamarine, steatite, sandstone, marble, shell, bone and ivory from within. For some resources however the

region was dependent on the neighbouring and far off areas too. Various semi-precious stones as quartz, chert, agate, carnelian, agate and jasper were possibly obtained from Karnataka region on the west.

This was a flourishing region as is evident from its resource-use for which the region developed contacts with far off area as well as manufacturing activity. Also the region with its well-established links with the Roman world was one of the most lucrative trading stations during the post-Mauryan period.

Kerala

The western coast is narrower and lies between Sahyadri and the Arabian Sea and has three regions, the Konkan, Karnataka and the Malabar (Singh 1971: 907). The Kerala or Malabar Coast is surrounded by the Western Ghats on the east and the Arabian Sea to the west. The earliest reference to the region is known through the mention of the word 'Keralaputras' in the Ashokan edicts and 'Kerobothros' by Ptolemy, the geographer of second century A.D. The major portion of information on Kerala comes from the *Sangam* literature. Literature elaborates on the three ruling dynasties Cera-Chola and Pandyas ruling in the southern sector of the subcontinent. The Kerala coast was very important for India's maritime trade in the early centuries A.D. The author of the *Periplus* of the first century AD and Ptolemy's *Geographia* names a few ports of the region that were extensively used in this period. They are Muziris, Tydis, and Nelcynda among others. However, archaeologically significant urban centres have not been known from the area. The region is more abundant with megalith burials.

Sitewise Distribution Of Manufactured Objects

The chart 19a shows the different raw materials used in the region. These are copper, iron, carnelian, agate, jasper, crystal, feldspar, shell and granite.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Local production of iron is suggested by the presence of slag at many places in central and north Kerala (Gurukkal 1999: 27).

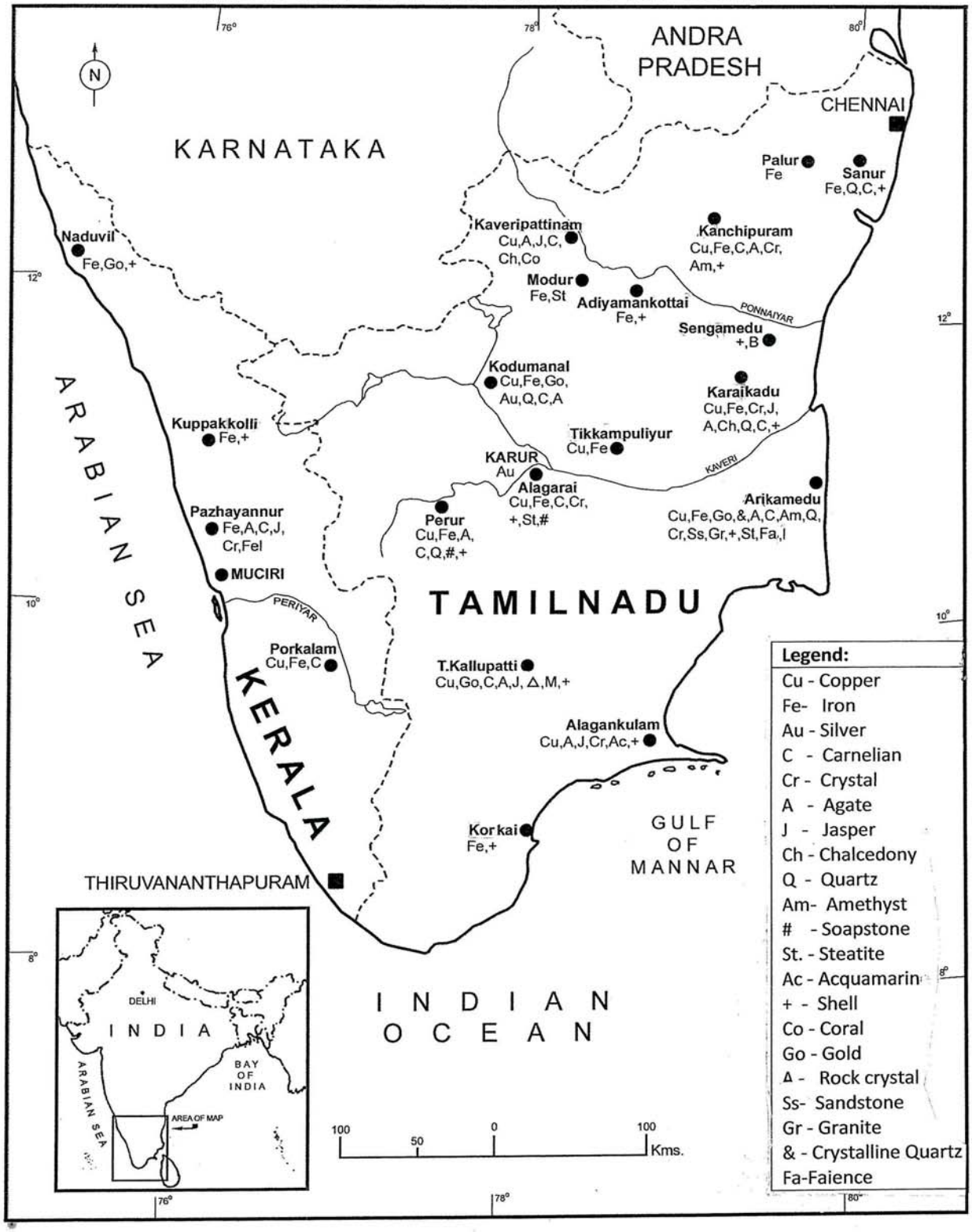
Beads: A carnelian bead blank was recovered from the early historic period levels at Pattanam. This perhaps indicated craft production at the site (ed. Kesavan,

Chart 20a
Kerala—c.200 B.C.---300 A.D.

Raw Materials	*Cheramangar*	*Porkalam*	*Pattanam*	*Naduvil*	*Kuppakkolli*	*Pazhayannur*
Copper/Bronze	bowl					
Iron	arrowheads,clamps, hooks,tripod,knife, sickle,rod	tanged knife, objects		knives, swords, arrowheads, spears, daggers, blades, tripods, lamps, bells, hoes, shovels	knives, swords arrowheads, spears, daggers, blades, tripods, lamps, bells, hoes, shovels, ploughshares	daggers, chisels, hooks, nails
Gold				object		
Semi-Precious stone		Carnelian beads	beads			Agate, Carnelian beads, cherty Jasper, Crystal beads, Feldspar beads
Ordinary Stones	Granite slabs	capstone				
Shell				beads	beads	

MAP-20

SITEWISE DISTRIBUTION OF RAW MATERIALS IN TAMIL NADU AND KERALA, c. 200 BC - 300 AD



Selvakumar and Radhika 2006: 25).

Character of Sites and Distribution of Manufactured Objects

Megalith distribution in Kerala is slender and scattered pointing towards a disbursed nature of settlements as opined by Gurrukkal (1999: 25). Porkalam and Cheramangar in Trichur district are two burial sites. While the burials at Porkalam were dated between third century B.C. and first century A.D., the dates for the burials at Cheramangar are unknown. Porkalam literally means battlefield and have revealed urn burials (Thapar 1951: 6). Megalith burials have been found at sites such as Kuppakolli in Wynad district and Naduvil in Kannur district (Gurukkal 1999: 26). The burial structures typical of Kerala consist of capstone (Toppikal) and umbrella stone (Kuttakal) and laterite cave (Kallara). The megaliths have been dated c. 1000 BC to 1000 A.D. (Gurrukkal 1999: 25). Megalith burials have been found at Machadand Pazhayannur in Trichur district. The excavations here revealed pottery consisting of black and red ware, red ware bowls, dishes, lids and pots. Some pots had graffiti designs on them. A grinding stone was also disovered. The ceramic evidence along with the iron objects could be dated to the period around the beginning of the Christian era, dated second century BC to second century A.D. (Mehta and George 1978:4-7).

Pattanam or Paravur was perhaps the first early historic settlement near the mouth of the river Periyar in Kerala. Excavations reveal early historic bricks, roof tiles and terracotta ringwells which suggest a segmentation of the functional and residential areas (ed. Kesavan, Selvakumar and Radhika 2006: 19). The concentration of artifacts from the surface indicated a rich phase of the early historic period (c. 300 BC-500 A.D.). The artifacts uncovered were pottery of different kinds and beads (Shajan, Cherian, Tomber and Selvakumar 2008:1). The excavators claimed to have found a sherd of Italian *sigillata* not only from the Malabar Coast but from the entire west coast of India. The other specimen of Italian sigillata occurs at Arikamedu. This pottery was also found at Egyptian ports of Myos Hormos and Berenike (Shajan, Cherian, Tomber and Selvakumar 2008:2). Also rouletted ware spread mostly concentrated in the eastern coast of India, has been found at Pattanam. Here too the excavators claim to have found this ware for the first time in the west coast (Shajan, Cherian, Tomber and

Selvakumar 2008:2). A rich find of Roman wine amphorae from the surface as well as the early historic levels of the excavation reinforce the importance of Pattanam in the Indo-Roman trade of the early centuries A.D.

The archaeological evidence found at site suggests that the famous Indo-Roman trading port of the early centuries A.D. of Muziris could have been located at Pattanam (Shajan, Cherian, Tomber and Selvakumar 2008:3).The Classical sources spreak of several important ports on the Malabar Coast. Tyndis (Tondi) is described by the author of the *Periplus* as a place of great kingdom of the 'Koprobothras' and situated a little away from Muziris (McCrindle reprint 2000: 50). Elangkon, present Quilon is called by Ptolemy as the metropolis distinguished for its commerce (McCrindle 2000: 55). The Periplus mentions another port called Nelcynda on the Malabar Coast (McCrindle 2000: 60). However archaeologically we do not have much information on these sites. The evidence of Indo-Roman trade on the Malabar Coast apart from literary sources is evident from the find of Roman coins from several sites. These are, Kottayam (Kurumbranad), Eyyal (Trissoor), Valluvally (Parur), Kizhalur, Edamaruku (Pala), Punjar, Niranam and Panang A.D (Gurukkal 1999: 31).

Copper bowls are only found at Cheramanagar and no artifacts of copper have been found from Porkalam. Iron artifacts are substantial at all megalith sites. These are arrowheads knife, sickle, hooks, rods, tripod and clamps, tanged knife. The other artifacts at Porkalam have been left unspecified. Porkalm, Pattanam and Pazhayannur have produced a few carnelian beads. However, Gurukkal observes the presence of non-local materials such as beadsof carnelian at dolmenoid cists at a few sites in Kerala (1999: 27). A granite capstone has been found from Cheramanagar.

Raw Materials Available Within The Sub-Region

Iron Ore

It is mostly seen as magnetite-quartzite forms. The important deposists are in Calicut and Mamallapuram districts. It is available in Calicut-Naduvallur, Alamparra, Nilambur, Kalikava, Chembrasseri and Manjeri areas (Ramachandran 1986: 91)

Copper

Sporadic occurrences as well as native copper occur in Vadavthur east of Kottayam are known. Other occurrences are noted at Punalur in Quilon district (Wadia 1966: 125).

Gold

This is available in the northwest of the Nilgiri mountains. This is attributed to the ancient gold washing industry near Nilambur in Kerala in Wynad district (Ziauddin and Narayanswami 1974: 90). Primary gold is noticed in auriferous quartz veins in Chundale, Vayittiri, and Tariode in Waynad district (Ramachandran 1986: 89).

Quartz, Feldspar

This was noticed in Kozhikode, Palaghat and Malappuram districts. They contain magnetite quartz rock (Ramachandran 1986: 79).

Gemstones

Semi-precious stones are seen included in pegmatite veins or gravels. The variety reported are, jasper, and quartz crystals among others (Ramachandran 1986: 90). Banded agate-jasper has been reported from Vellanad in Trivandram district (Menon 1962: 12).

Raw Materials Available Outside The Sub-Region

The presence of semi-precious stones of chacedonic silica in Karnataka have been noted on p.147.

KARNATAKA

Granite

Banded granite is quarried at a number of places near Bondal, Thokur and Padushedde in Mangalore taluk (*South Kanara district Gaztteer* 1973: 13).

Epigraphic, Numismatic and Literary Linkages

Evidence of trade from areas north of Tamil Nadu are provided by the finds of Satavahana coins at Tirucoilur and Karur. Satavahana coins of this class were current across a wide tract in the Deccan with regional differences as opined by Mitchiner (1995: 82). *Purananuru,* the famous anthology regarding the Chera rulers of Karur

(Vanji) relates the encounter between a Chera king and Satakarni II of the Satavahana dynasty in the second century BC when they invaded northern Tamil region (Chopra, Ravindran and Subramaniam 1979: 41). The author of *the Periplus* and Ptolemy of the early centuries A.D. speak highly of the ports of Muziris, Nelcynda on the Malabar Coast that engaged in trade in the early centuries A.D. (Schoff 1995: 205,207; McCrindle reprint 2000: 38). Trade acitivity on the Malabar Coast as well as in the Deccan can be understood on the distribution of Roman amphorae, and coins of Roman Emperors in the region. Roman coins are also reported from Karnataka from Akki Alur in Dharwad. The hoard contained three coins belonging to Roman rulers dated c. 193-217 A.D. (ed. Devaraj 1995: 79). Other sites that produced Roman denari are T.Narsipur, Brahmagiri and Chandravalli. It is therefore not unlikely for the Kerala region to access resources from further north via the west coast.

Kerala in the early historical period was a thriving centre of trade. The megalithic sites as well as early historical sites produced several artifacts of iron. While resources such as gold, iron, and gemstones as agate, quartz, and feldspar were locally available, the presence of carnelian as a non-local material was significant. Carnelian beads have been reported at Porkalam, Pattanam and Pazhayannur. A carnelian bead blank is also reported from Pattanam indicating craft production apart from iron smelting activity. Non-local materials such as carnelian was most likely procured from northern portions of the Deccan Trap of Karnataka and granite from the region. The occurrence of Roman artifacts and coins in the peninsular region can be regarded as an important indicator of this movement between regions.

CHAPTER 4

PERIOD OF THE GUPTAS AND OTHER CONTEMPORARY RULERS c. A.D. 300—500 A.D.

The Gupta dynasty emerged in the fourth century A.D. and ruled over large parts of northern India. The Gupta empire bonded the independent kingdoms such as Samatata (Bangladesh), Davaka (Koshal region), Kamrupa (Assam), Nepal and Katripur (Punjab) and subjugated different 'tribes' such as Malavas, Arjunayanas, Yaudheyas, Madrakas, Abhiras and so on that once inhabited the different pockets of the subcontinent into a cohesive political entity.

There is a much larger debate about the presence or absence of the decline of trade and feudalization of the economy from the fourth century onwards. Though the debate is not the main focus of the present work, (for debate see Sharma 1987, Chattopadhayaya 1995) in the conclusion to this thesis, I will briefly examine whether the nature of procurement of raw materials in this period throws any light on this larger controversy.

In the Deccan, the Vakatakas were the most important power after the fall of the Satavahanas. They were the contemporaries of the Gupta dynasty. Together they made a formidable force in subduing other neighboring dynasties. The Vakatakas continued the Gupta legacy in art and architecture. Their patronage produced some of the finest Ajanta cave paintings. Further south, the early Pallavas were the contemporaries of the Guptas. They ruled from c.350- c.550 AD and made Kanchipuram their capital. A region-wise study will help us elaborate on the differences in the patterns of communication in the specified period.

Potwar Plateau and the Northwestern Region

The North-West Frontier Province region, touching the eastern borders of Afghanistan, as we saw, was in a flourishing state in the time period between the c. 200 BC and 300 AD. It witnessed the rule of several foreign dynasties in this period namely the Kushanas, the Sassanians and the Kidara Kushanas. A tribe described as the Little

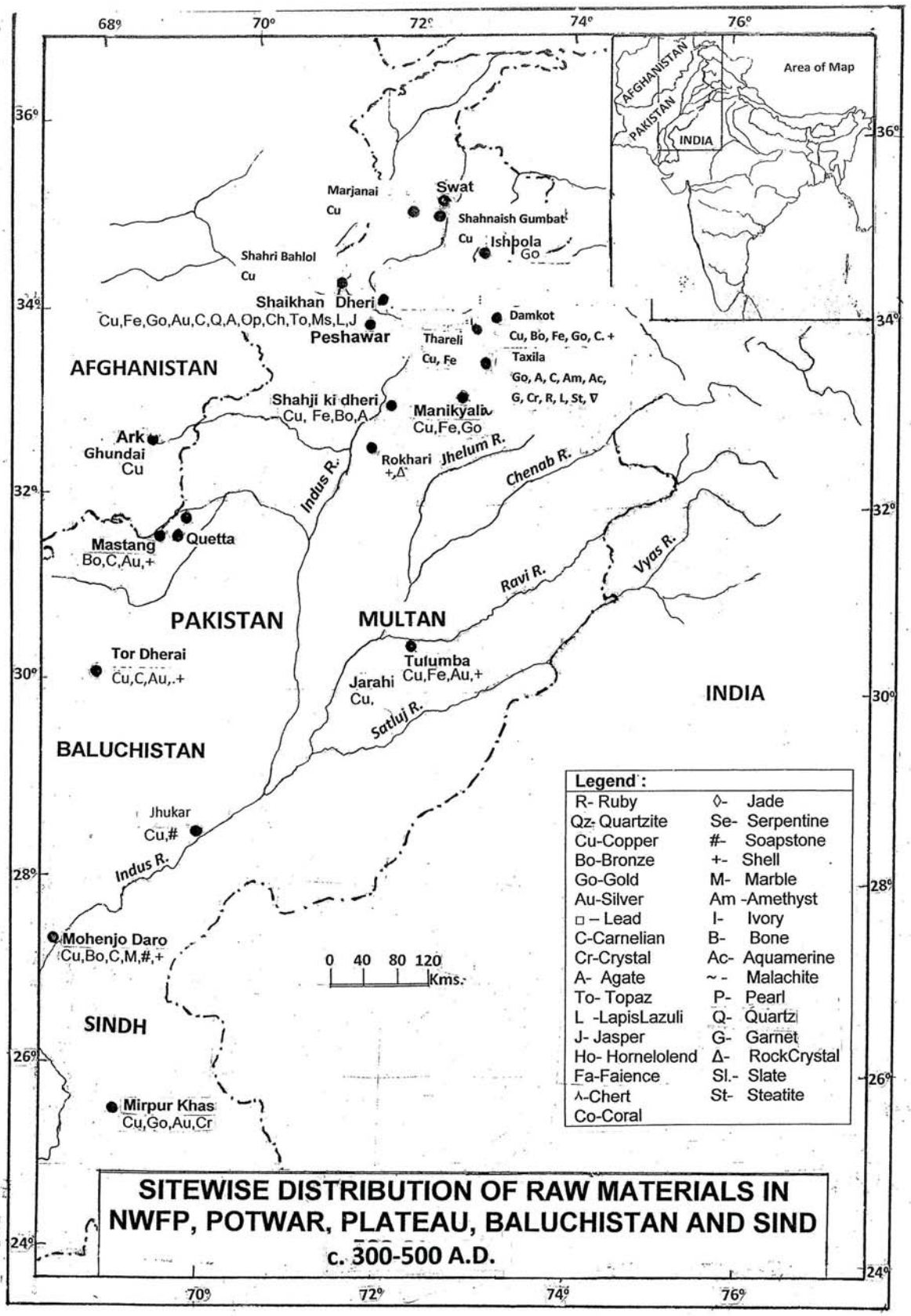
Chart 1b
Potwar Plateau and NWFP c.300-500 A.D.

Raw Materials	*Marjanai*	*Damkot*	*Thareli*	*Shahri-Bahlol*	*Shnaisha Gumbat*
Copper/Bronze	coin	antimony rod, hairpins, finger ring, Bronze coin mould, earrring, object	objects		coins
Iron		nails, hooks, clamps, rods, arrowheads, rings	objects		
Gold		beads			
Semi-Precious stone		Carnelian beads			
Ordinary stone		Schist lamps, stucco reliefs, sculptures	sculptures		
Shell/Coral		bangles, beads			
Ivory				seal-die	

Chart 1 b (continued)
Taxila

Raw Materials	*Kalawan Stupa*	*Jaulian Stupa*	*Mohra MoraduStupa*	*BhamalaStupa*	*Lalchak stupa*
Copper/Bronze				finger rings	
Iron		lamp, spear, adze			
Gold		leaf, beads, coins			
Silver					coins
Semi Precious stone	Agate, Carnelian beads	gems of Agate, Carnelian, Amethyst , Aquamarine Garnet, Crystal ,Ruby, beads	Carnelian seal		
Lapis Lazuli		gems, pieces of paste			
Ordinary stones	Stucco Buddha heads	Buddha heads, figurine pieces			
Coral		beads			
Ivory		pieces			

MAP-21


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu
Swat
Shahnaish Gumbat
Cu
Ishpola
Go
Shahri Bahlol
Cu
Shaikhan Dheri
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
Thareli
Cu, Fe
Damkot
Cu, Bo, Fe, Go, C. +
Taxila
Go, A, C, Am, Ac,
G, Cr, R, L, St, ∇
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu,Fe,Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dherai
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu,#
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
^-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
B- Bone
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SIND
c. 300-500 A.D.

Kushanas or Kidara Kushanas whose capital was at Peshawar were originally the feudatories of the Sassanians who were ruling in Afghanistan and the Indus Valley (Majumdar and Altekar 1986: 19). The Kidara Kushanas may have possibly formed an alliance with the Gupta monarch Samudragupta to defeat the Sassanians in 387-8 A.D. Thus, Gandhara, Kashmir, and the western and central Punjab came under their authority (Majumdar and Altekar 1986: 22; Rahman 1993: 44).

In Taxila, the period between the third and the fifth century is known from the remains of splendid Buddhist monumental art that reflects the flourishing culture of the period. The Northwestern region is equally impressive and vast in terms of Buddhist remains. Several sites have revealed the establishment of the Buddhist creed in form of stupas, monasteries, pillars, sculpture, Buddha heads and stucco reliefs. Two of these sites are, Damkot and Shah-ji-Ki-Dheri. A few sites such as Chanaka Dheri in the vicinity of Shahbazgarhi, Mekha Sanda, Thareli (Jamalgarhi), Kashmir-Smast (Mardan) district and Manikyala have been identified as stupa sites (Dani 1968-69:164-66; Majumdar 1927-28:78; Dani, 1988: 80-81, 82, 95). In this light, Chakrabarti observes that though a survey in the Pakistan Punjab plains and Sindh have revealed about one hundred and thirty sites, no details about them are yet published (2006: 335).

Sitewise Distribution Of Manufactured Objects

Chart 1b shows the raw materials used in this sub-region. They are, copper, lead, bronze, iron, gold, silver, agate, amethyst, aquamarine, carnelian, lapis lazuli, steatite, soapstone, shell, coral and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Bronze: A coin mould of bronze has been found at Damkot (Dani 1988:95).

Character of Sites and Distribution of Manufactured Objects

Taxila was one of the most important sites in the northwestern region. It was primarily a city founded by the Indo-Greek, Saka-Parthian and Kushana rulers that continued almost up to the late fourth-fifth century A.D. Marshall in his report on the excavation at Taxila has elaborately described the Buddhist stupas and monasteries that formed the majority of structures beyond the fortifications of the cities. In the

vicinity of the city of Sirsukh, Marshall has identified well preserved *Sangharamas* of Kalawan, Mohra Moradu, Pippla, Jaulian and Bhamala. These were extensively reconstructed and renovated in the fourth- fifth century (Marshall, 1951: 5).

At Kalawan, the original structure of the main stupa was repaired at a later date than the third century and a plinth was added to its base in the fourth-fifth century (Marshall 1951: 323). The stupa sites were grouped along with monasteries, assembly halls and chapels. A large number of stucco pieces included the head of Buddha image, torso of Vajrapani and image of lay worshipper were recovered from the stupa sites. The Jaulian stupa is dated from the second to the fifth century A.D. The original structure dated from the Kushana period but the semi-ashlar repairs and plaster reliefs were added in the later three centuries (Marshall 1951: 371).

The minor antiquities recovered from these monasteries included two gold coins of Chandragupta II along with two Bhadra and Kushana coins at Taxila. Siddiqui observes that such finds prove the occupation of the place up to the commencement of the fifth century A.D. (Siddiqui 1935-36: 35). Large colossal images of the Buddha dated to the fifth century are found behind the main stupa at Jaulian (Marshall 1951: 373). An inscription in Kharosthi was found here that can be placed in the latter half of the fifth century A.D. (Marshall 1951: 375). The chapel contained Buddha figures in fragments and other stucco sculptures, decorative pieces, vessels, utensils, objects of personal use, Buddhist emblem and coins (Marshall 1951: 377, 383-4). Pottery items included narrow necked flask, spouted pots, and inkpot and so on. Fragments of a Sanskrit manuscript in Brahmi character, of the Gupta period dated to the fifth century A.D. was found on earthenware vessel from the Jaulian stupa (Marshall 1951: 387). From the Mohra Moradu monastery was found a massive steatite seal of the Gupta period belonging to one ‘Harishchandra’ (Marshall 1960: 161).

A relic casket from the Jaulian stupa was of a novel type. It was bejeweled round the dome with a variety of gems. They were garnet, carnelian, lapis lazuli, aquamarine, ruby, agate, amethyst and crystal (Marshall 1951: 373). Another interesting discovery was of a burnt carnelian seal engraved with the words ‘Sri Kuleshwaradase’ in Brahmi characters of Gupta period (Marshall 1960: 121). As observed by Marshall, “The political history of the region is not so much known. However, the splendid

remains of Buddhist monumental art dating from the fifth century leave us in no doubt either on the prevailing wealth of the Kushanas or the essential cultural and political unity of areas east and west of the Indus" (Marshall, 1951: 75).

In the Northwestern Frontier Province there are numerous sites with Buddhist remains. Some of the sites are Shah-ji-ki-Dheri and Shahri-Bahlol, Damkot, and Chatpat (Dani 1965-66; 1968-69). Shahri-Bahlol is a site where relics of the Buddha and *chaityas* have been discovered. Also, we get an ivory seal-die of late the Gupta period (Hargreaves, 1910-11: 29; Stein, 1911-12: 95). Damkot is another site where Kushana rule continued till the fourth century AD. A few copper and bronze artifacts are known from here. A coin mould of bronze has been found here. At Damkot, a defensive wall is traceable in most parts of the site (Dani1988: 95). A terracotta plaque showing the seated Buddha and a very fine moulded human head of unbaked clay is was also found here at Damkot. The plaque is of Gandhara style and speaks of late Gupta-Ganges valley style as observed by Dani (1968-69: 164-66; 1988: 95). The monastery and stupa at Damkot were dated to the fourth century A.D. (Dani 1968-9: 24). Adnandheri in NWFP is a monastic site where period III is assigned is dated from the end of the third to beginning of fourth century A.D. The chronology is fixed on the basis of coins or artifacts, though, no coins or artifacts of this phase have been documented (Dani, 1968-69,: 37). A coin is reported from Adnandheri with a Brahmi legend and is dated to the fourth century A.D. (Dani 1968-9: 44). Chatpat is a site with Buddhist remains and archaeological reports assign a phase dated to the fourth century A.D here. However no artifacts are reported from it (Dani, 1968-69: 67).

The Buddhist site of Shnaisha Gumbat in Swat region has yielded Kushano-Sassanian coins, and red ware cooking vessels (Rahman1993:15). Period II here is designated as late Kushana and has yielded several Buddha sculptures. During this period a change in the basic Buddhist creed is noticed as non-Buddhist deities are also included in the pantheon. Indra, Brahnma and Maheshwar were incorporated. Thus, a separate shrine was constructed against the stupa to accommodate the figure of Siva Mahadev (Rahman 1993: 21-22). Kushano-Sassanian period copper coins have been found from this site (Rahman 1993: 41-2). Several panel reliefs, architectural remains and independent reliefs showing Bodhisattava in green schist have alsobeen noted

(Rahman 1993: 47-54). Marjanai is another Buddhist site in Kabal tehsil in Swat district. Amongst the remains of the votive stupa no. 3 were sculptures, terracotta objects and relic caskets (Taj Ali 1995: 8). One coin each of the late Kushana and Kushano-Sassanian period was discovered here (Taj Ali 1995: 12). Ubu Tangi in Swabi in Mardan district is another Buddhist site of the third-fourth century A.D. The remains here include the main stupa along with votive stupas. Broken pieces of Gandhara art have been collected from here (Taj Ali 1995: 103). Damdara, a site dated to the fourth to the sixth century A.D. has yielded broken pieces of Gandhara art (Taj Ali 1995: 104).

Charsada district in the Peshawar valley is one of the earliest areas in the region that has a distinguished ancestry. The Peshwar region continued to flourish under the Kushanas along with the rest of northwestern India (Ali 1994: 1). There are several Buddhist sites in this sector and these have a broad chronology. These have been dated between the first and the fifth century A.D. (Ali 1994: 93-4). Some of the sites (mounds) are Bala Hissar, Mra Dherai and Kharono Dherai (40 hectares and more) and yielded architectural and sculptural fragments of Buddhist stupas and monasteries. Important among them were the underground chambers and stupas (Ali 1994:94). Mra Dherai has yielded pottery, bricks, terracotta figurines, coins (Ali 1994: 18). Other sites range from twenty five hectares to five hectares in size. These are Nisatta Graveyard in Nowshera, Charsadda, Rajar Dherai, Mandezai Mounds, Mani Khela, Skaro Dherai, Chehal Ghazi, Jura Kili (Ali 1994: 14, 17, 23, 27, 29, 94). Most of these sites have produced terracotta figurines, pottery, coins and sculpture. It has been observed by Ali (1994:92) that, the pattern of settlements of the Buddhist and early historic period show a high level of political organization that existed between the first to the fifth century A.D. as reflected in the elaborate settlement hierarchy.

Several other sites in the region have revealed Buddhist monumental structures from the fourth-fifth century A.D. Chanaka dheri (Shahbazgarhi), Mekha Sanda (Karamar hill top), Thareli (Mardan district), Kashmir-Samst (Mardan district) and Manikyala are a few of such sites (Dani 1988: 80-1, 82). Excavation at Chanaka–Dheri exposed three structural complexes. They comprise a large rectangular tank built of diaper

masonry, with schist slab floors, a rectangular base and a circular stupa. The third complex has a huge structure of a terraced platform with stupa and monastic cells. Coins of the Kidara Kushanas help in dating this whole complex to the fourth and fifth centuries A.D. (Dani 1988: 80-1). Mekha Sanda revealed a stupa with stucco reliefs of the Buddha. Structures included a staircase connecting the main stupa court, votive stupas, chapels and shrines and an assembly hall. One hall had a life-size statue of the Buddha on pedestal. At Thareli (Jamalgarhi), pottery, stone reliefs, stucco sculpture pieces and iron and copper artifacts were found (Dani 1988: 81-82).

Kashmir-Smast in Mardan district is the only excavated cave-temple discovered in Pakistan as claimed by Dani. It was at the entrance of the cave that a Gupta period inscription was discovered. On the basis of the masonry and the inscription, the temple can be dated to the latter half of the fifth- sixth century A.D. (Dani 1988: 82).

The resource-use in the region is varied and has been mostly recovered from the Buddhist remains. The metals used for manufacture of different artifacts are, copper, iron and gold. The objects are antimony rods, hairpins, fingering, earring, gold coins, copper leaf, cylindrical reliquary, bells; a bronze coin mould is notable (Dani 1968-69: 164-66; 1988: 82). Iron artifacts comprise lamps, spearhead, adze head, and chain links nails, hooks, clamps, rods and arrowheads and so on (Marshall 1951: 373; Dani 1968-69: 164-66; 1988: 82). Carnelian beads from Damkot are the only semi-precious stones used in the Northwestern region (Rahman 1971: 172). Other resources used for manufacture are shell and ivory, steatite seal, ivory pieces and coral beads (Marshall 1960: 121; Dani 1968-9: 167-8). Schist objects are mostly in form of lamps and sculptures (Rahman 1971: 175).

Raw Materials Available Within The Sub-Region

The availability of gold, iron, agate and chalcedony and steatite and limestone has been noted on p.26,27.

Rock-Crystal

Bi-pyramidal quartz crystals are found in the gypsum of the salt marl near Kalabagh on the Indus (IG.I. 1908: 162).

Garnets

The northern portion of Hazara district and the hills on the northeast borders of Peshawar are built up of crystalline, igeneous and metamorphic rocks sometimes containing schorl and garnets as bands among thin bedded mica-schists (Rose 1908: 4). A recent study by Law (2011: 311-12) identified the potential sources of vesuvianite- grossular (a form of garnet) in several places bordering Malakand, Mohmand and Bajaur agencies of NWFP.

Ivory

As reported by Lahiri (1992:75), elephants were probably available in the forest cover in this region in the third millennium B.C.

Raw Materials Available Outside The Sub-Region

The availability of beryl (Rajasthan) has been noted on p.30, shells (Sindh) has already been noted on p 38. The resources such as lapis lazuli and silver Afghanistan have been noted on p. 31.

JAMMU AND KASHMIR

Semi-Precious stones

Garnets are found in the Rupsu area as accessory minerals of sapphire from Soomjam in the neighbourhood of Padam in Zanskar (Banerjee 1992: 387; La Touche 1918: 182). Some amethyst occurs with sapphires of Zanskar range in Kashmir (Mallet 1887: 68). Some well-formed hexagonal prisms of beryl are reported near Machel, a village on the Bhutna below Soomjam. The beryls did not occur in any large quantity, and those found were very poor in colour (La Touche 1918: 182).

AFGHANISTAN

Copper

There is abundance of copper ore in the Kajak Amran range, Shah Maksud range and Nish, sixty miles north of Kandahar and Hazara mountains (Ball 1881: 265).

Copper was mined in the past in the Hirat and Farrah province in the west, Kapisa in the east, Kandahar and Zabul province in south (Chin. S. Kuo 2007: 2.1).

Ruby

The ruby mines of Afghanistan are situated near the village of Jagdalak in Kabul, The Balas ruby mines of Badakshan are situated on the banks of the Shighnan, a tributary of the Oxus. They have been known for very many centuries, and the name balas is derived from Balakshan, or from Balkh the capital town (Ball 1881: 429-30).

Epigraphic, Numismatic and Literary Linkages

The northwest was possibly procuring raw materials from Afghanistan and Jammu and Kashmir on the one hand and Punjab and Sindh on the other. The political references indicate the linkages between these different regions. The Kidara Kushanaas were the vassals of the Sassanians ruling in Afghanistan and the Northwest. After defeating the Sassanian overlords in early fourth century A.D. they occupied Kashmir and Central Punjab (Majumdar and Altekar 1986: 21-2). A large number of gold coins similar to those of the Great Kushanas with legends Kanishka, Vasu or Vasudeva have been found in Punjab and Afghanistan.They have been assigned to the late Kushana rulers Kanishka III, Vasudeva II and Vasudeva III (Agrawal 1989: 48). The Sassanian emperor Hormizd II (AD 300-309) is known to have married the daughter of a Kushanashah (Rahman 1993: 44). Coins of Kidarites also occur at Tepe Maranjan and Kabul along with Sassanian rulers of the late fourth century (Vogelsang 2002: 166). A certain late Kushana king Gadahra ruling in Kashmir started mentioning the name of the Gupta monarch on his coins in place of Shahpur II (c.309-379AD), the Sassanian king (Mani 1999-2000: 56). This possibly indicates that the overall authority of the Gupta monarchs was recognized by the Kidarite rulers of Kashmir.

In Sindh, Buddhist remains have been found similarly on an elaborate scale (these will be discussed in the next section) as in the whole northwestern sector. It is entirely possible that the northwestern Buddhist sites were linked in a larger religious whole which included the Buddhist communities. Thus, the mobility of people and resources between NWFP and Sindh is quite likely.

Sites in the Taxila and the Northwest Province in the third to the fifth century A.D. had few resources such as copper, iron and gold among metals. The other resources

were aquamarine, garnet, agate, carnelian soapstone, and shell and ivory arrowheads and schist. A coin mound of bronze at Damkot might indicate manufacture. Resources such as iron, gold, steatite, semi-precious stones as agate and chalcedony and ivory were available within. Copper and ruby was possibly accessed from Afghanistan, semi-precious stones such as aquamarine, garnet, from Jammu and Kashmir and Punjab and shells were likely to be procurred from the Sindh coastline.

From the above study it may be understood that the northwestern region and Taxila in the Potwar Plateau in the third to the fifth century AD was most likely a thriving centre of trade and commerce. It has been pointed out by Chakrabarti that, the importance of this region has not been optimally investigated archaeologically. Neverthless, the Buddhist monasteries and stupas centered on the Swat Valley must have thrived on the religious generosity of the merchants and princes on their way to West Asia and Central Asia (Chakrabarti 1997: 174). The affluence of the Buddhist architectural remains seen at several stupa and monastic sites can be understood from the variety in sculptures of the Buddha in stucco and stone recovered from them.

Jammu and Kashmir

The region during the period between the third and fifth century A.D. seems to have been ruled by Kidara Kushanas (Little Kushanas) whose capital was at Peshawar. They were the feudatories of the Sassanians. The Kidara Kushanas probably allied with the Gupta monarch Samudragupta against the Sassanian overlords in c.367-8 A.D. and further consolidated their power in Gandhara, Kashmir and western and central Punjab (Majumdar and Altekar 1986:21-2). However, the 'post-Kushana' phase in Kashmir upto the beginning of the Karkota dynasty in the seventh century A.D. is known primarily through sculptures, bronzes, terracotta figures and coins, which belong mostly to Kushana and Huna dynasties, as observed by Chakrabarti (1984:114). Some of the sites studied here are Semthan, Kotbal Anantnag, Pandrethan, Manda, Ambaran, Kansipur and Dard Graves in Leh Valley (Pande and Chattopadhyay ed. 1987: 327; Ahmed 2007: 100; Kak, reprint1971: 116; I.A.R. 1976-77: 21; I.A.R. 1999-2000:63; Mani, 1999-2000: 4; Chakrabarti 1984: 115).

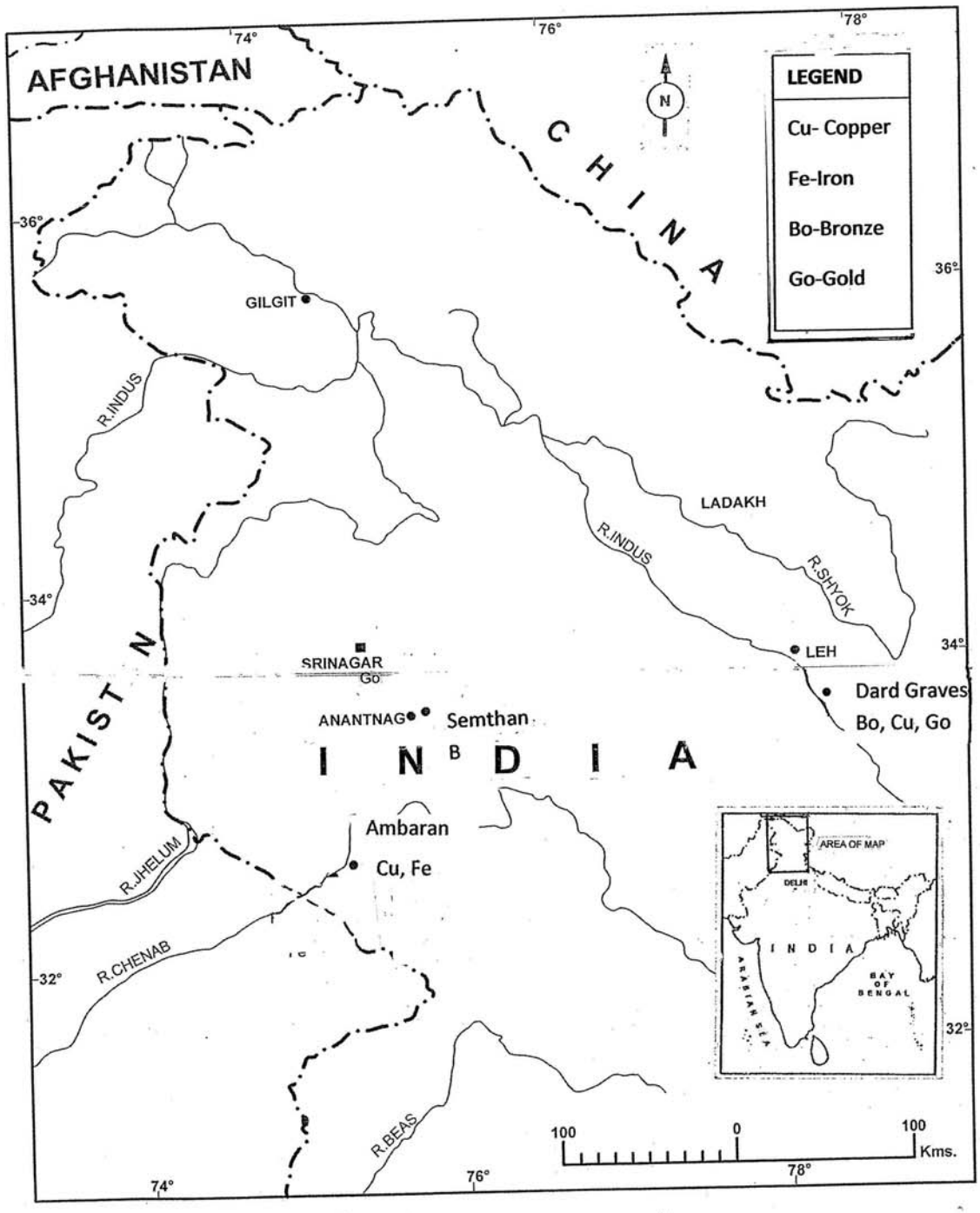
Chart 2 b
Jammu and Kashmir—c. 300—500 A.D.

Raw Materials	*Srinagar*	*Ambaran*	*Dard Graves*
Copper/Bronze		coins	Bronze implements, leaflets, pendants, beads, mirror
Iron		nails, hooks, rings, slag	
Gold	coins		objects
Ordinary Stone			sculptures

MAP-22

SITE WISE DISTRIBUTION OF RAW MATERIALS IN

JAMMU AND KASHMIR, C. 300-500 A.D.



Sitewise Distribution Of Manufactured Objects

The different materials used for artifacts have been elaborated in chart 2b. These are mostly copper, bronze, iron, and gold.

Evidence of Manufacture of Finished Products at Different Sites

Iron: At Ambaran, remains of a metal smith's workshop were discovered along with a large quantity of iron slags, iron implements and other associated materials. The workshop is dated to the Gupta period. Period III here is designated as post-Kushana (c. 4th-6th century A.D.) (I.A.R. 2000-01:67-8).

Character of Sites and Distribution of Manufactured Objects

Semthan in Anantnag district is a well studied site in Kashmir. It is better known as an Indo-Greek settlement. Period is dated between c. 200 B.C. and the beginning of the Christian era. As per the excavation reports, the next stage Period IV is designated as Kushana-Huna period from the first to the fifth century A.D. A terracotta human face influenced by Gupta art was also found here (Pande and Chattopadhyay ed. 1987: 331). Terracotta finds include both human and animal figures that undoubtedly portray Gupta influence (Shali 1993: 122).

Ambaran in Jammu district is a site famous for the yield of the so-called Akhnur Buddhist terracotta heads. Period III here is said to be 'post-Kushana', dated fourth to fifth century A.D. Stone sculpture of Gupta style, terracotta of Gupta period and copper coins of late Gupta period dated c.500 A.D. were revealed from the site. A square base of a possible stupa was partially exposed. The Buddhist monastic establishment made of burnt bricks belonging to Period II (Kushana period, c.1st to 3rd A.D.) was revealed here (IAR 1999-2000:58, 63; Mani, 2000-01:47).

Kotbal Anantnag is an explored site where a Kushana settlement from first to fourth century A.D. is reported. A raised tile pavement found here was probably for some religious purpose. Human motifs are depicted on these tiles. Kashmir after the Kushanas came under the rule of the Hunas (Ahmed 2007: 100, 192). Kansipura in the Baramulla district is identified with the city of Kanishkapura founded by the Kushana Emperor Kanishka. Period IV here is reported as 'post-Kushana' and is assigned to the fourth and the sixth century A.D. (Mani, 1999-2000: 4).

The remains of a Buddhist stupa have been unearthed at Pandrethan (Puranadhithana). Except for a few fragmentary sculptures which may be assigned to the seventh century, no other antiquities were found at this site. As noted by Kak, the sculptures (Bodhisattatva image, *Ashta Matrikas* and a beautiful stone capital) are interesting as much as they show influence of the art of the imperial Gupta rulers that had penetrated into Kashmir and left a permanent mark upon the local craftsmanship (Kak 1971: 115-16). A site called Sudh Mahadev in Jammu district was excavated in 2002-03. Several structural remains in the form of stone masonry wall encased with diaper pebbles on either side were revealed in excavations. Typical Gupta stamped pottery and red ware was found here. The important shapes in pottery include vases, bowls, variety of spouts and sprinklers. The excavated remains can be dated to Gupta period (3rd-4th Century A.D.) (Kaul 2001: 12). Another site called Ushkur in Kashmir valley has revealed the remains of an ancient Buddhist stupa and a large number of terracotta heads and other fragments in excavations in 1916. The city was more famous as Huviskapura, a city founded by the Kushana king Huviska. The facial features of the heads were similar to Gupta sculpture of late fifth century A.D. (Kak 1933:152-5).

The pattern of resource-use in the urban areas such as Semthan and Ambaran is limited to the use of copper as coins and iron as nails, hooks and rings. Both the sites have yielded sculptures and terracotta artifacts in the form of human and animal figures. The small site of Kotbal Anantnag has also produced human motifs on tiles from the Gupta period. The Dard Graves from the Leh Valley have produced a few artifacts of bronze such as implements, copper leaflets and beads (Chakrabarti 1984: 115).

Raw Materials Available Within The Sub-Region

Gold

Its availability has been noted on p.3. Further, Valentine Ball notes that in Ladakh certain quartz reefs which traverse rocks of the carboniferous period are almost certainly gold bearing (Ball 1881: 177). A certain Dr. Bellow mentioned having seen an old deserted mine in the auriferous sands in the Kargil sector (Ball 1881: 213).

Copper

Copper ores including sulphides, oxides and carbonates occur in Shumahar area in Anantnag district, Baramullah district, in Lidar valley, and the Kangan area in Srinagar district (Wadia 1966: 125).

Iron

Availability has been noted on p.35. Quartz veins carrying sulphide of copper and iron with some oxides, carbonates and arsenide occur on the Lashteal hill, Baramulla district (G.S.I. Misc. Pub. No. 30 Part X, 1977: 44).

Tin

Tin occurs at Udhampur, Kathua-Doda district at Gandh-top, Dudu, Kaplas-Jamotha granites. The area around tin mineralization consists of Panjal volcanic of basic lava flows with intertrappean quartzites, Bhadarwah sedimentaries, hybrid gnesis, migmatites intruded by Kaplas and Jamotha granite (Babu 1994: 61).

The Kashmir region between the c. 300 to 500 A.D. was possibly accessing its own resources such as copper, iron and gold and tin. The availability of the above mentioned resources are noted from different sectors of the territory. Evidence of manufacture has been found in the form of a metal smith's workshop along with iron slag and implements at Ambaran. Even though the Kashmir region was not under direct control of the imperial Gupta rulers, their influence in form of art is clear from the above references. Procurement of resources was possibly done from within the sub-region.

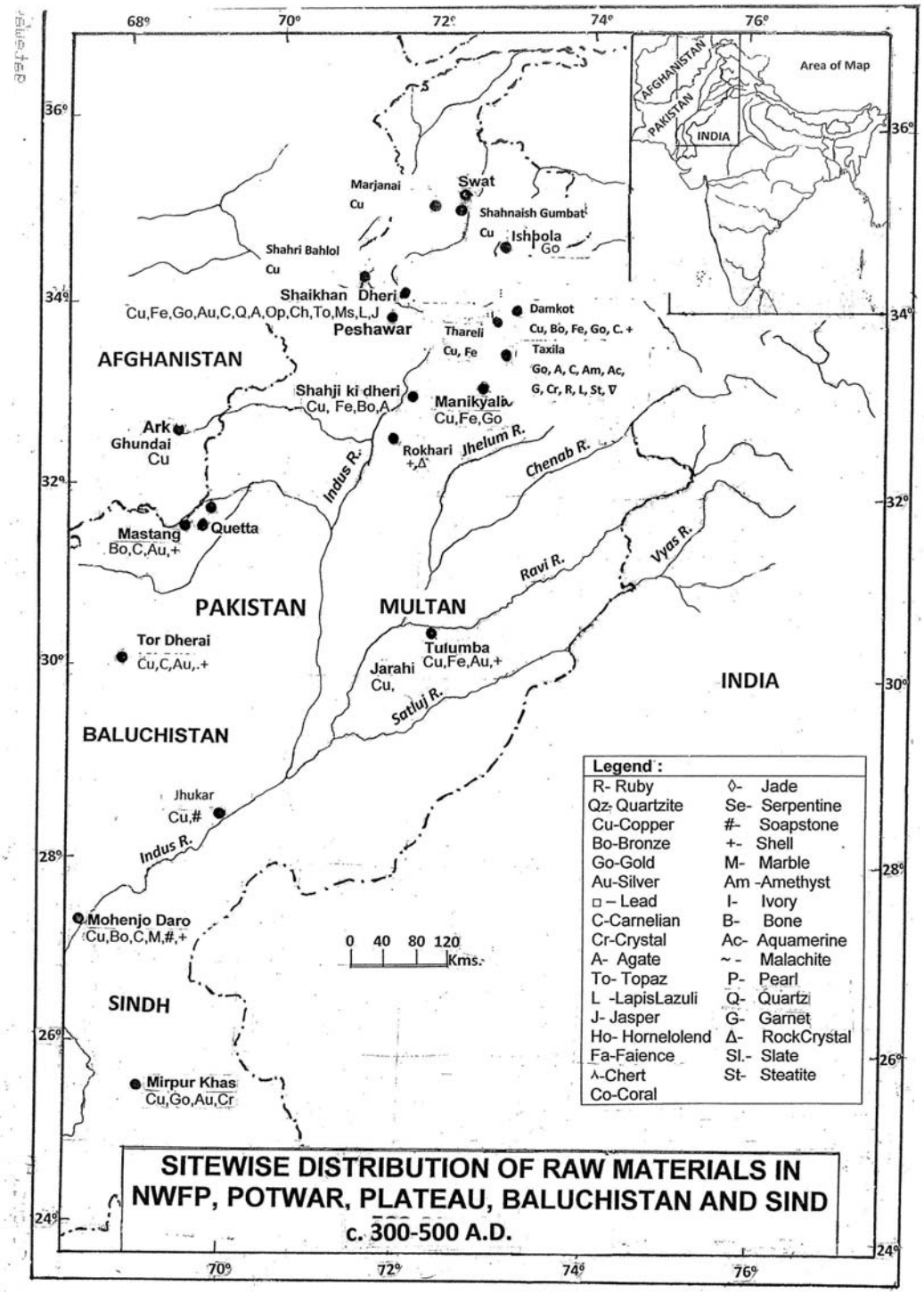
Sindh

Sindh in this period was ruled by the Kushana Shahis and the Sassanians till the latter half of the fifth century. It was largely marked by stupas and related remains. Additionally, Hindu sculpture of the same age was recovered from Banbhore in Debal, and an image of Brahma was found near Mirpur Khas (Panjwani and Mansukhani 2002: 94). Mirpur Khas is one of the prominent Buddhist stupas in the area. Huien Tsang in his account describes Sindh as predominantly Buddhist.Throughout the period of the imperial Guptas, Sindh was steadfast to Buddhism. The different sites explored are, Jukar-jo-Daro (Sindh), Siraj-ji-Takri (Upper Sindh).

Chart 3b
Sindh- c. 300-500 A.D.

Raw Materials	*Jhukar-jo-Daro*
Copper/ Bronze	coins
Iron	knives, daggers, spearhead,chisels
Soapstone	plaque
Shell	bangles

MAP-23


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu
Swat
Shahnaish Gumbat
Cu
Ishpola
Go
Shahri Bahlol
Cu
Shaikhan Dheri
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
Thareli
Cu, Fe
Damkot
Cu, Bo, Fe, Go, C. +
Taxila
Go, A, C, Am, Ac,
G, Cr, R, I, St, ∇
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu,Fe,Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dherai
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu,#
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
ʌ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
B- Bone
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SIND
c. 300-500 A.D.

Sitewise Distribution Of Manufactured Objects

The raw materials used in this region are, copper, iron, steatite and shell. These have been elaborated in chart 3b.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been noted in this period.

Character of Sites and Distribution of Manufactured Objects

Chakrabarti has noted that the evidence from Sindh with the exception of Bramhanabad-Mansura is limited to stupa sites; there is no major structural or planning evidence from any of these sites (2006:335). Jhukar-jo-Daro in upper Sindh in Larkana district has a stratum I designated to the fifth century A.D., a number of terracotta sealings of the period between the third and the fifth century A.D has been reported by Majumdar (1927-28:78). Majumdar and Altekar have written elaborately on the remains of the given period in Sindh. This primarily pertains to the stupa at Mirpur Khas. The stupa is given a Mauryan date but the super-structure, ornamentation and figure sculptures is clearly indicative of the Gupta period as observed by them (1986: 434). The Buddhist city of Siraj-ji-Takri is located along the western limestone terraces of the Rohri Hills in the Khairpur district of Upper Sindh. Its ruins are still visible in the form of stone and mud-brick walls and small mounds (Husain 2006; 237). Mirpur Khas in Sindh is one site where stupa style and ornamentation demonstrate art of the specific period. It had three vaulted cells, which contained images of the Buddha. Hindu elements had begun to infiltrate in the Sindh region in the Gupta era. Hindu sculpture like Brahma images were found near Mirpur Khas at Banbhore in Debal (Dani 1988:94).

The resources used at the above mentioned sites are limited to copper, iron, shell and soapstone. The artifacts range from copper coins, iron knives, spearhead, chisels, dagger, shell bangles and beads, soapstone plaque (Majumdar 1927-28: 78, 83; Mughal 1967: 144).

Raw Materials Available Within The Sub-Region

Shells

Shells are available along the Sindh coastline.

Raw Materials Available Outside The Sub-Region

NWFP

The availability of iron has been noted on p. 26-8.

Soapstone

Occurrence of soapstone has already been noted on p.41

Copper

Lahiri (1992: 150) has noted some 'showings' of copper ore in Chitral and Waziristan. This has also been discussed on p.28.

Ivory: This has already been discussed. So, refer p.27.

Epigraphic, Numismatic and Literary Linkages

The region of Sindh shares affinity to the NWFP in terms of the Buddhist remains of the fourth- fifth century A.D. Politically as well, these regions were part of the Sassanian empire till c. 380 A.D. Subsequently, the Kidara Kushanas overthrew the Sassanians in the middle of the fourth century A.D. and extended their rule to the entire Northwestern region (Majumdar and Altekar 1986: 19; Agarwal 1989: 49).

Multan

The ancient town of Tulumba is situated one mile south of the modern town of the same name in Multan district. The site is locally known as 'Tulumba Bhir'. The region was ruled by the Indo-Greeks, Sakas as known from their coins in this region (Mughal 1967: 21). The region is integrally related to the Northwestern province in terms of historical sequence is concerned. Tulumba (Multan) has a few mounds from where material remains were unearthed. These are Jarahi on the banks of Tulumba distributary, Bagar and Ratti Tehri Bhir in Tulumba Bhir and so on (PA no. 4, 1967: 1, 3, 21).

Sitewise Distribution of Raw Materials

Chart 4b elaborates the raw materials used in the region

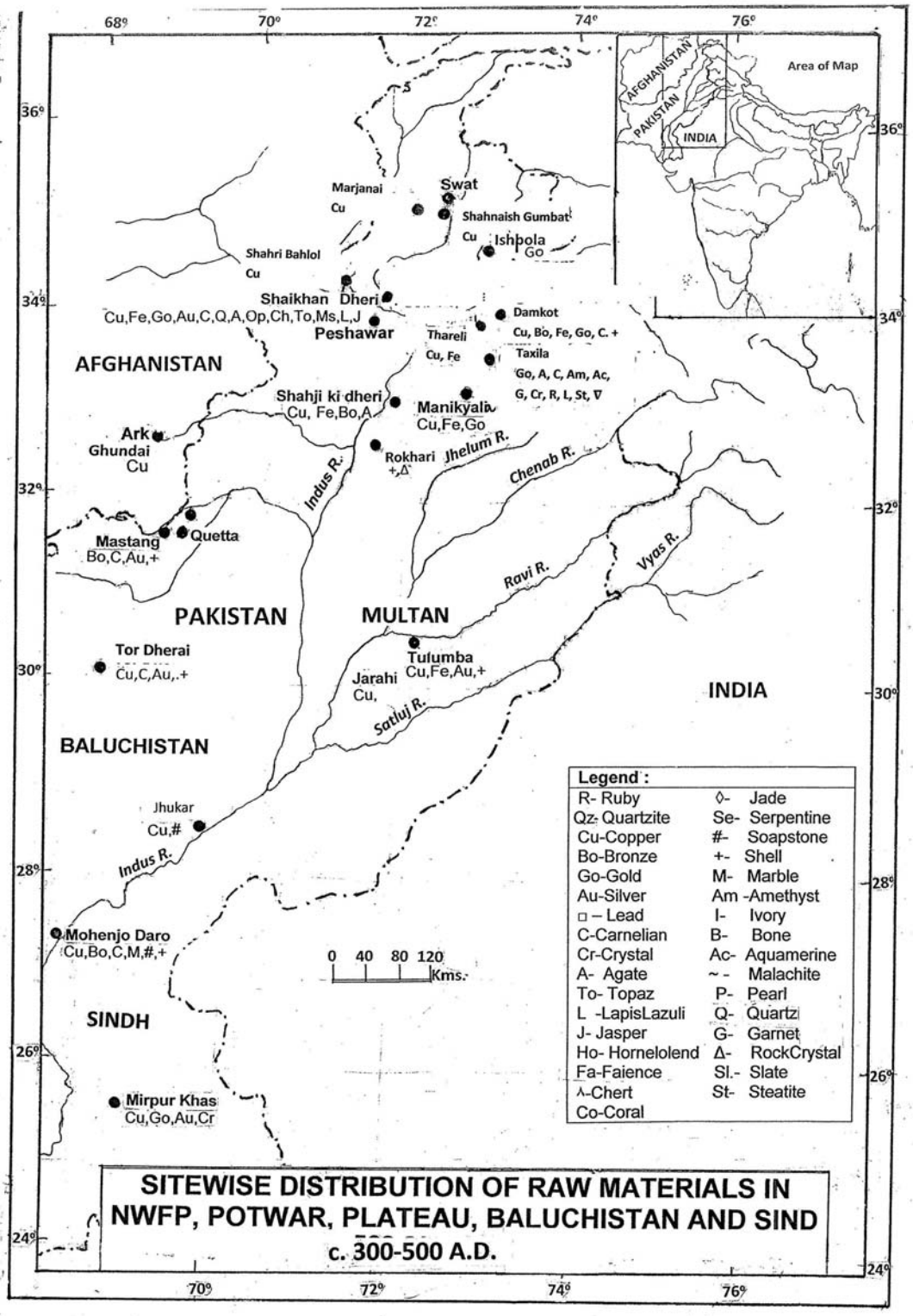
Evidence of Manufacture of Different Objects

No evidence of manufacture has been found in this region.

Chart 4b
Multan -c.300-500 A.D.

Raw Materials	*Tulumba*
Copper/ Bronze	bangles, coins, dish
Iron	objects
Semi-precious stone	unspecified beads
Shell	bangles, beads

MAP-24


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Marjanai
Cu
Swat
Shahnaish Gumbat
Cu
Ishpola
Go
Shahri Bahlol
Cu
Shaikhan Dheri
Cu,Fe,Go,Au,C,Q,A,Op,Ch,To,Ms,L,J
Peshawar
Thareli
Cu, Fe
Damkot
Cu, Bo, Fe, Go, C. +
Taxila
Go, A, C, Am, Ac,
G, Cr, R, L, St, ∇
AFGHANISTAN
Shahji ki dheri
Cu, Fe,Bo,A
Manikyala
Cu,Fe,Go
Ark
Ghundai
Cu
Rokhari
+,Δ
Jhelum R.
Chenab R.
Indus R.
Mastang
Bo,C,Au,+
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tor Dherai
Cu,C,Au,.+
Tulumba
Cu,Fe,Au,+
Jarahi
Cu,
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Cu,#
Indus R.
Mohenjo Daro
Cu,Bo,C,M,#,+
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Au,Cr
Legend :
R- Ruby
Qz- Quartzite
Cu-Copper
Bo-Bronze
Go-Gold
Au-Silver
□ – Lead
C-Carnelian
Cr-Crystal
A- Agate
To- Topaz
L -LapisLazuli
J- Jasper
Ho- Hornelolend
Fa-Faience
λ-Chert
Co-Coral
◊- Jade
Se- Serpentine
#- Soapstone
+- Shell
M- Marble
Am -Amethyst
I- Ivory
B- Bone
Ac- Aquamerine
~ - Malachite
P- Pearl
Q- Quartz
G- Garnet
Δ- RockCrystal
Sl.- Slate
St- Steatite
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SIND
c. 300-500 A.D.

Character of Sites and Distribution of manufactured Objects

Tulumba in Multan area has a period II of the fourth-fifth century A.D. It was an urban site of the post-Mauryan period. The other mounds in the region (Jarahi and Ratti Tehri Bhir) have not yielded material remains dated to the period between third and fifth centuries AD. Mughal reports the find of shell bangles and beads from this phase at Tulumba (Mughal, 19 67:27, 144). Chakrabarti observes that the early historic sites of the northwest which embody a long historical sequence from Achaemenids to Sassanians and Hindu Shahis are mostly settlement sites, Buddhist stupa and monastic sites (1999:279-80).

The resource-use is minimal. It includes copper coins, bangles and iron objects. Among precious metal objects, silver coins of Indo-Greek king Apollodotus are noteworthy. Semi-precious stone beads have not been specified. Shell bangles and beads have been found.

Raw Materials Available Within The Sub-Region

The region is bereft of the raw materials used at sites like Tulumba.

Raw Materials Available Outside the Sub-Region

NWFP

Raw materials such as copper, iron, and chalcedony are available in the Salt Range and the NWFP and their presence have been noted on p. 26,27, 28 and 29 .

SINDH

Shells were available in the Sindh coastline.

Epigraphic, Numismatic and Literary Linkages

The entire Northwestern region including Multan and Sindh were well known for the various Buddhist sites. Cousens (ARASI 1909-10: 92) reports the find of similar moulded carved bricks at Brahmanabad in as well as Thul Rukhan ans Shorkot in north east Multan. Thus, the Buddhist connection between the parts of the northwestern region is profound.

The Multan region mainly formed portion of the northwestern region. It does not have many sites dated to this period between 300 and 500 AD. The use of resources is also

minimal. Most of the raw materials were possibly procured from the Salt range in the NWFP and shells obtained from the Sindh coastline.

Baluchistan

Baluchistan came under the Sassanians, between c. 227 to 590 AD with the Ephthalites controlling the central and northern areas. Later, the area fell completely under the Sassanian dynasty and remained under their control till the end of the sixth century A.D. Hindu rulers of Sindh replaced the decaying Sassanians before the Arab conquests. Significant relics of Graeco-Bacterian rule and Buddhist settlements have been identified in northern and southern Baluchistan. The remains of a stupa also exist at a place called Tor-Dherai in Loralai district of Baluchistaan (Litvinsky and Desyatovskaya 1999: 438). Although some of the Achaemenian, Greek, Mauryan, Kushana, and Sassanian ruled here and historians mention southern Baluchistan in their records, nevertheless, significant archaeological finds that can be correlated with their presence are rare (Dashti 2004). The region does not yield any structure or artifacts from the period under study (Panjwani and Mansukhani 2002: 92). At Mastung, situated south of Quetta in Kalat state, a few artifacts and coins of Indo-Parthian period are found. Hargreaves (1981: 7) states that the site was occupied for a continuous period before and after the Christian era. However, it was abandoned long before the Muhammedan invasion.

Uttarakhand and Himachal Pradesh

The area comprises the entire hilly tract in the northern Himalayan region. Uttarakhand lies to the southeast section of Himachal. No major early historic site has been yet excavated in modern Himachal Pradesh. From Uttarakhand, Purola and Jagatgram a few sites are known but it is yet to be known if there was any large site of the period in this region (Chakrabarti 2006:337). At Bharat Mandir, in Dehra Dun district, period II is assigned to the eighth century A.D. and interestingly noted as ‘reoccupied’ (I.A.R. 1981-82:96).

Samudragupta, the illustrious Gupta Emperor is said to have subdued the whole of north India upto Kailash and Mansarovar by a series of military campaigns and established a huge empire. The hill region at that time along with the republican tribes were left semi-independent but had to obey orders and tender tributes. The copper plate inscription at Nirmand, a temple in Kulu contains the name of Mahasamanta

Samudrasena. That Gupta hegemony continued over the hill region is known from the Mandasor Stone Inscription of Kumargupta I which describes the mountains Kailash as 'one of the breasts of the earth' (Khanduri 1994: 59-60). Kailash and Sumeru were illustrious mountains of the Kumaon-Garhwal Himalayas. It is widely held that Kartikeyapura of the Allahabad Pillar Inscription of Samudragupta was located in the Katyur Valley (modern Baijnath in Almora). But as observed by the author(s), we do not have any direct evidence of Kumauni history prior to the fifth century A.D. Therefore, it seems that the political history of the whole Uttarakhand was shrouded in obscurity during the Gupta period (Agarwal and Khararwal 1998: 155).

It is observed in *The Antiquities of Himachal* (Postle, Neven and Mankodi 1985: 185) that Samudragupta's Prasasti informs us that his empire extended from the north and northwest upto Punjab and along Himalayan foothills. Coins of Chandragupta II are found in Punjab which may substantiate this observation. Therefore it is more probable that his empire included parts of the present Himachal Pradesh as well. A stone sculpture of standing Kartikeya in front of the Saktidevi temple in Chhatradi shares late Kushana and imperial Gupta stylistic traits and is assigned to the fifth century A.D.

The areas of Himachal and Uttarakhand in the Gupta period are understood mostly on the basis of structural remains, coins and ceramics. A large number of Yaudheya coins (ruling in the Punjab region) were found from different parts of Kumaon-Garhwal. A copper coin hoard from Jaunsar-Bawar region and from Landsdowne in Garhwal are reported. They do point to the territorial expansion of this tribe. These tribes however disappeared as separate entities by the fifth century A.D. (Khanduri 1994: 200; Charak 1978: 86). At Virabhadra, Rishikesh in the Dehra Dun district three layers have been designated on the basis of structural remains, coins, and ceramics. The mid-phase dated to fourth - fifth century A.D. is distinguished by a mould-made bowl, kaolin sherds and sprinklers. These pottery and bricks were recovered from the Gupta-post-Gupta layers. The entire period of occupation was from the early centuries of the Christian era to the eighth century AD. The early, mid-phase and late phases were reported to be under the Kushana, Gupta and Katuri (local) dynasties respectively (IAR 1973-74:29, 1974-75: 41). Further archaeological work is awaited from this region.

Evidences of intense monastic activity are known from the Kangra valley and all over the Himachal region. Handa notes some such sites. One such area is the Lakhmandal-Pathiyar locality. Kushana age bricks and scattered structural parts of different periods were found in explorations. A rock inscription from Pathiyar of Kushana period has also been found, the extent of the area is spread over two square kilometers. It is conjectured by the author that there might have existed an extensive monastic establishment here. From the spread of the monastic activity of the region, the author points to the evidence that indicates that such activity might have continued upto the sixth century A.D. until the attack of the Hunas (Handa 1994: 168). Also, Buddhist archaeological material has been found in the Kangra valley from third century B.C. to sixth century A.D. But so far no systematic exploration and excavation has been conducted in the region (Handa 1994: 139).

The study of archaeological remains from the third to the fifth century A.D. in the Himachal and Uttarakhand region brings out the need for a more systematic and through documentation. The corroboration between the epigraphs of the Gupta period with the archaeological remains is missing. Most of the sites referred to above, have revealed artifacts, structural remains and sculptures from the Kushana period layers. The subsequent periods at such sites are designated from the sixth to eighth century A.D. As per our study, such sites fall in the post-Gupta layers and will be dealt in the next chapter. Nevertheless it seems that the sites where the Kushana layers continued upto the fifth century A.D. witnessed a stretched out political rule of the Kushanas even though they lost much of their imperial power by the third century A.D. The overall sovereignty of the Gupta Emperors can be understood in the following examples. Frequent references to the hill region in their epigraphs, addressing the local officers as *mahasamantas* and above all the adaptation of the Gupta style in architectural as well as sculptural patterns tends to indicate towards the all around influence of the imperial Gupta rulers in the Himachal and the Uttarakhand region. As observed by Chakrabarti, the entire hilly region was well within the orbit of the powers belonging to the Indo-Gangetic alluvial area in the early historic period (2006:337).

Indo-Gangetic Divide and the Punjab Plains

The Punjab plains as the starting point of the great plains of India witnessed a moderate presence of this period. Few sites which show evidence of the Gupta period

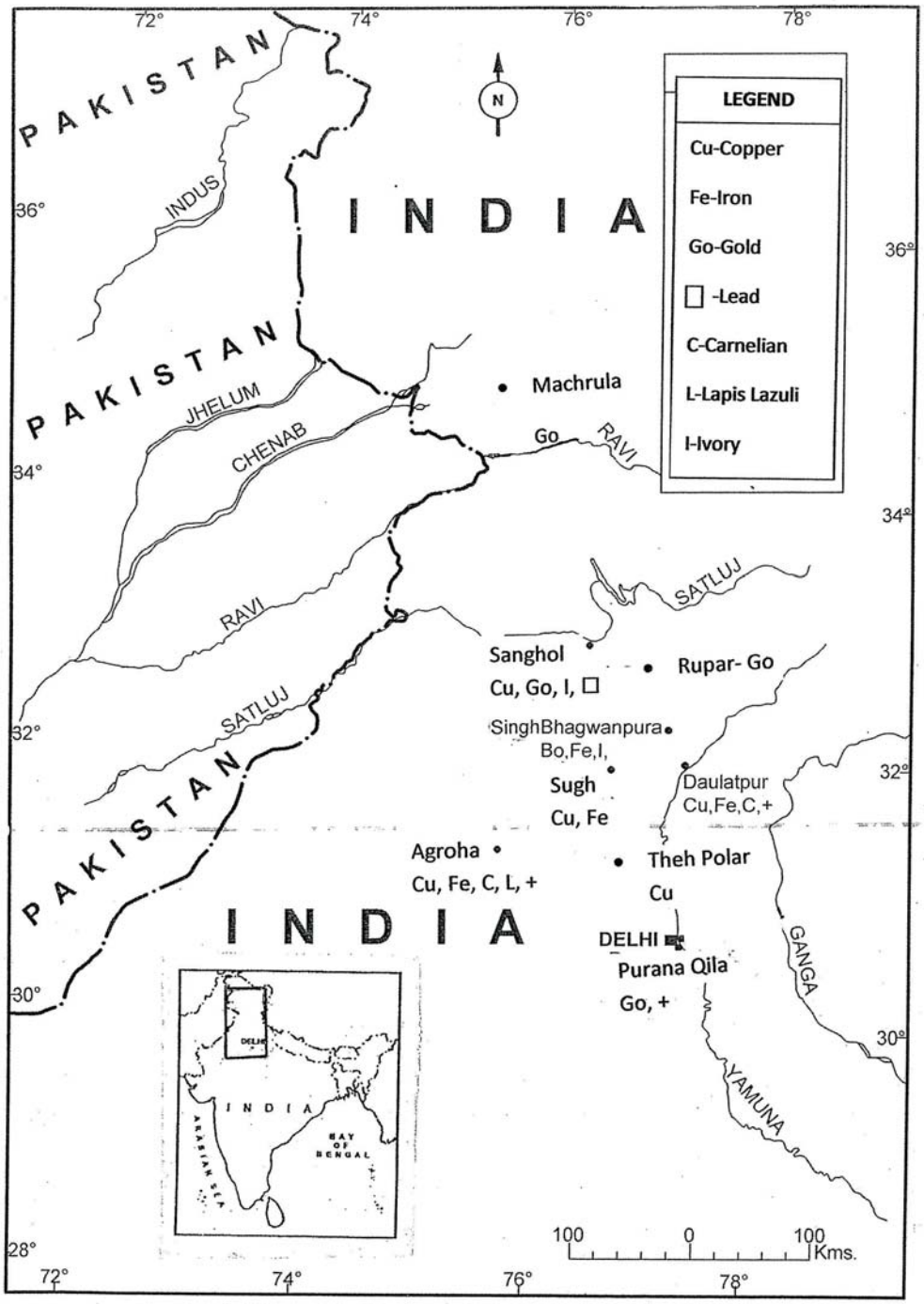
Chart 5b
Punjab Plains and the Indo-Gangetic Divide----- c.300—500 A.D.

Raw Materials	*Rupar*	*Theh Polar*	*Machrula*	*Sugh*	*Purana Qila*	*Agroha*	*Sanghol*
Copper/Bronze		coins, utensils, dish, bangles		antimony rods, coins		coins ,rings, antimony rods, bells, bangle pieces, beads	pendants
Iron				arrowheads, axes, nails, rings		arrowheads, clamps, nails, chisels	
Lead							seal
Gold	coin hoard		coins		plated coin		coin
Semi-Precious stone				unspecified beads		Carnelian beads	unspecified, pendants,beads
Lapis Lazuli						beads	
Shell					bangle	bangle pieces, beads	
Ivory							pendants, dice, bangles, decorated pieces

MAP-25

SITE WISE DISTRIBUTION OF RAW MATERIALS IN THE

INDO-GANGETIC DIVIDE and PUNJAB PLAINS c. 300-500 A.D.



between the third and the fifth century are Rupar in Ambala district, Theh Polar in Karnal district and Machhrula in Shiekhpura district. After the decline of the Kushana power, the tribal republics of Yaudheyas ruling between Sutlej and Beas, Kunindas were based around Jalandhar and Arjunayanas occupied the Agra-Jaipur region. Terms like *Yaudheya-ganasya Jayah* proudly proclaimed their victory and continued to flourish down to the middle of the fourth century A.D. The coins of the Yaudheyas found in large numbers from south eastern Punjab and northern Rajasthan (Majumdar and Altekar 1986: 30-2). The Indo-Gangetic divide had a few sites bearing the artifactual material of the specified period. They are Purana Qila, Sugh, Sanghol and Agroha. Burnt bricks pertaining to dwelling houses, walls and pavement of the Kushana-Gupta period have been found at Agroha (Srivastava 1952: 2)

Sitewise Distribution Of Manufactured Objects

Chart 5b shows the principal raw materials used in this region. It will be amply demonstrated that copper, iron, lead, carnelian, lapis lazuli, shell, ivory and bone have been widely used here in this period.

Evidence of Manufacture of Finished Products At Different Sites

Shell: Shell industry was important at Sanghol as is evidenced by varieties of bangles, beads, pendants and other decorated objects along with cut columella (I.A.R. 1986-87: 71).

Metalwork: A large number of crucibles attest the existence of a metal working industry at Sugh, Ambala district dated c. first to the fifth century A.D. (I.A.R. 1965-66:36). At Sanghol, iron ingots and slag was noted in Period VI designated between first to the fifth century A.D. (I.A.R. 1970-71:31).

Character of Sites and Distribution of Manufactured Objects

The region was mostly under the Yaudheya by the fifth century AD. Rupar, Agroha, and Sugh are some of the well excavated sites of the region. Dilip Chakrabarti (1997: 185) noted that the the site was in occupation till the sixth century A.D. Y.D. Sharma (1953: 126) also notes the find of silver utensils of ritual use, representative of Gupta craftsmanship, terracotta sealings in characters of fifth-sixth century A.D. and red ware pottery at Rupar. Agroha revealed a few brick structures in stratum II possibly dated of the late Kushana/ Gupta period (Srivastava 1952: 2-3). At Sunet Period - V-

Red polished ware of Gupta period. terracotta beads, seals were recovered (IAR 1983-84: 69). Excavations have revealed the hundreds of seals and sealings with different legends in Gupta Brahmi characters (IAR 1983-84:70).

A sealing with legend 'parakrama', an epithet characteristic of Samudragupta is reported from Sunet near Ludhiana. Besides two clay sealings from the same place have been recovered that bear the legend '*Sriguptasya*' in the characters of third to fourth century A.D. However there is some doubt regarding the identification of this ruler to the Gupta ruler Srigupta (Thaplyal 1972: 65). Cunningham (1970: 65) has reported a Gupta coin from Sunet. Also, a hoard of Gupta coins are reported by S.R. Goyal in Mitathal in Hissar district and Chandragupta-Kumardevi type of coin hoard have been found in excavations at Rupar (Goyal 1995: 155). After Samudragupta's expedition, the tribal republics situated on the western and south-western fringe of Aryavarta proper, paid homage to him and are listed as tributary kings in the Allahabad Pillar Inscription.These included the Arjunayanas, Yaudheyas, Madrakas ruling in the Punjab and eastern Rajasthan respectively (Raychaudhuri 1996: 480).

The distribution of artifacts in this region is spread across a few sites. Agroha, and Sugh have yielded some amount of copper and iron artifacts. These are in the form of antimony rods, coins, bell, bangles and beads. Iron is found in the form of arrowheads, clamps, chisels, axes, nails and ingots (I.A.R. 1975-76: 73). A gold coin hoard from Rupar is another notable find (I.A.R.1978-79: 69). The use of semi-precious stones is seen at Agroha. The raw materials of these beads have been left unspecified at Sugh, while at Agroha we only find the use of carnelian. The sites in the Punjab plains do not have any artifacts of semi- precious stones. The use of lapis lazuli is noteworthy in the context of the urban site of Agroha. The contact of the urban areas to far flung regions is substantiated through such usages. The other raw materials used in these urban sites are shell, bone and ivory. They are mostly used in the form of beads, bangles, dice, and decorated pieces respectively.

The other sites in the region include Theh Polar and Machhrula and Dhalewan in Mansa district in the Punjab plains and Purana Qila, Budhyana, Duria, Kanarikhera, Palharaj, Saphaw, Umrapur in the Sharanpur district in the Indo-Gangetic plains.Theh Polar is traditionally described as the abode of Paulastya muni who was an ancestor of Ravana.

This area falls within the holy land of Kurukshetra and belonged to a warrior tribe called the Yaudheyas who were mentioned by Panini. Clay sealing of Yaudheyas has been found at Sunet near Ludhiana (Thaplyal 1972:21-22). The Allahabad Inscription of Samudragupta similarly speaks of the Yaudheyas of this region (Srivastava, 1930-34: 142-3). Dhalewan yielded mud lumps, mud brick bats, walls, hearths, fragmented moulded rattle and terracotta sealing of the Gupta period (I.A.R. 2001-02: 205). At Thaneshwar, red polished ware of fourth to fifth century A.D. and *naigamesh* figures, large number of terracottas mostly of the Gupta period and other artifacts has been found. Bana mentions a defence wall and moat and the palace with two storey *dhavalagriha*. The site came into prominence in the post-Gupta period under the Pushyabhuti dynasty (Mani and Saran ed. 2006:33-34). Budhyana, Duria, Kanarikhera, Palharaj, Saphaw, Umrapur are some of the sites in the Sharanpur district. Budhayana yielded brick structures of the Gupta period and Duria revealed a Siva linga of Gupta period, red ware of Kushana-Gupta period, and terracotta figures (I.A.R. 2001-02: 255).

Theh Polar has a few copper artifacts in form of coins, utensils, dish and bangles (Srivastava, 1930-34: 142-3). A small site like Machhrula is worth mentioning for its find of gold coins of Gupta rulers. Also a single gold plated coin and shell bangle has been reported from Purana Qila (Srivastava, 1930-34: 142-3; IAR 1970-71: 10). The presence of the Gupta rule seems to be more profound in the Indo-Gangetic belt as compared to the Punjab plains.

Sanghol is a prominent religious site in the Punjab plains. Excavations have revealed a stupa complex and an adjacent monastery. This is the site where sculptures on railing pillars, cross-bars, and coping stones were discovered. A lesser known partially excavated stupa and monastery complex was excavated further to the northeast (Ray 2012: 75). At Sanghol, we find some amount of slag along with a lead seal of the Gupta period (I.A.R.1953-54: 7). Beads of unspecified semi-precious stones have been found here as well.

Raw Materials Available Within The Sub-Region

Gold

Gold is washed in most of the rivers in Punjab. Its availability has been noted on p.54.

Ivory

Elephants were part of the forest regions in the foothills of the Himalayas (Sukumar 1989: 13).

Raw Materials Available Outside The Sub-Region

RAJASTHAN

The availability of copper, iron, lead, and and carnelian has been noted on p. 30, 55, 109.

SINDH

Shell

Shells are available in the Sindh coastline.

AFGHANISTAN

Lapis Lazuli

Presence of lapis lazuli has already been noted on p. 31.

Epigraphic, Numismatic and Literary Linkages

The Punjab plains and the Indo-Gangetic divide in the Gupta period were possibly dependent on the resources such as copper, iron, lead and carnelian from Rajasthan. The proximity was significant enough for interacting with the Punjab plains and Indo-Gangetic divide. The Yaudheyas continued to be a powerful republic down to the third quarter of the fourth century A.D. who ruled between the Punjab, the banks of the Sutlej till borders of Bahawalpur (Johiyawar) and the Yamuna rivers. Their coins in the characters of the third fourth century A.D. are found in large numbers, in northern Rajasthan and the south-eastern Punjab (Majumdar and Altekar 1986: 32). The Bayana inscription of c. 300 A.D. refers to a Maharaja Mahasenapati of the Yaudheya clan (Hooja 2006: 139-40; Majumdar and Altekar 1986: 32; Jain 1972: 148-9). It is opined by Majumdar and Altekar that these republics may have continued with their semi-independent status till the Huna invasions in the middle of the fifth century A.D. (Majumdar and Altekar 1986: 35). The Allahabad Pillar Inscription informs us that, the Yaudheyas, Madrakas, Arjunayanas and Malavas were the tribal states that were subjugated by Samudragupta by late fourth century A.D.

(Raychaudhuri 1996: 480-1). Therefore the influence of the Gupta empire as far as northern and eastern Rajasthan was not unlikely. Shell procurement from Sindh can be considered with regard to the spread of Buddhist sites in the region and its affinity with Buddhist sites in the Indo-Gangetic and Punjab plains region.

On the whole, the Indo-Gangetic divide and the Punjab plains were dependent on resources such as iron, copper, lead and carnelian from Rajasthan. While, shells were probably obtained from Gujarat, lapis lazuli was obtained from the Badakshan region of Afghanistan. The procurement of different raw materials was particularly confined to the urban areas such as Agroha and Sugh. The shell industry is noticed at Sanghol and the procurement of shells from Sindh indicates the level of interaction with the coastal region to sustain an industry during this period.

Upper Gangetic Plains

The Upper Gangetic plains mark the beginning of the great plains of India. They touch the Yamuna river to its south and can be divided into the northern and the southern parts. The different sites where materials of this period have been found are Ahichchhatra, Atranjikhera, Hulaskhera, Sonkh, Musanagar, Hulas, Mathura, Sravasti, Saheth-Maheth and Manwandih (Dikshit 1952; Gaur 1983; Hartel 1993; Hem Raj 1994; Srinivasan 1989; I.A.R. 2001-2: 275-326; Marshall 1910-11: 16-18; Srivastava 1995-6).

Sitewise Distribution Of Manufactured Objects

Chart 6b shows the different raw materials used during the Gupta period. These are, copper, bronze, iron, gold, silver, agate, carnelian, chalcedony, jasper, amethyst, beryl, crystal, quartz, lapis lazuli, sandstone, faience, quartzite, marble, shell and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Fragmentary lumps and slag of iron have been found in all the layers including the Gupta period layers in the excavations at Sravasti (Sinha 1959: 67). A good quantity of iron slags were found in Period III (c.4th- 8th A.D.) at Kalli Pachchhim near Lucknow (Tewari 1999: 132). Gaura Hardo is an explored site of the region, which has revealed iron slag and fragments of cruicible from the Gupta-post-Gupta levels (Chakrabarti 2007: 19).

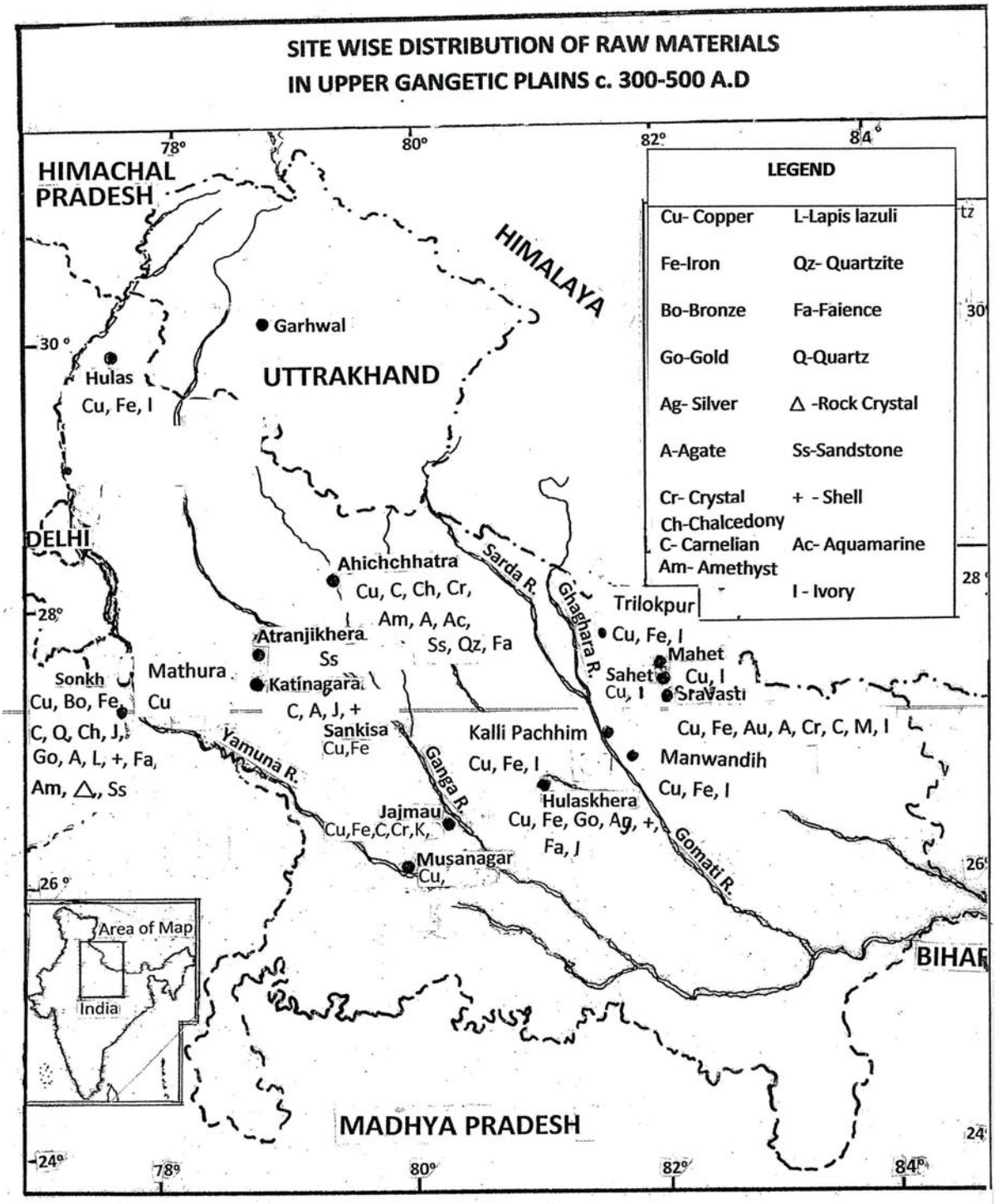
Chart 6b
Upper Gangetic Plains—c. 300—500 A.D.

Raw Materials	*Ahichchhatra*	*Sonkh*	*Hulaskhera*	*Musanagar*	*Mathura*	*Atranjikhera*	*Sravasti*
Copper/Bronze	beads	Bronze knob, statue mould, tripod	Antimony rods coins	bowl, antimony rods	coins		bead, cast coins, objects
Iron		arrowheads, rod,tube, pincers, nail, chisel, hooks, pick-axe, chain	arrowheads, spearheads, implements, nails, hooks				knife-blade, arrowhead, chisel, clamp, slag
Gold		broken bead, beaded ring, miniature beads, disc, flat wheels	pendant, plaque, beads				
Silver			coins				objects, coins
Semi-Precious stone	Carnelian,Chalcedony beads,Crystal,Amethyst beads, Agate, Aquamarine Beryl, bead	Carnelian, Agate,Quartz beads,Chalcedony, Jasper, Amethyst beads ,RockCrystal beads	beads				Agate, Crystal, Carnelian beads
Lapis Lazuli		beads					
Ordinary Stone	Sandstone figure, Quartzite stone	Sandstone figure, mill wheel, stone plaque				Sandstone sculpture	Marble bowls
Shell		beads	bangles				
Faience	beads, spacer	beads	beads				
Ivory			combs, bangles beads				object

Chart 6b (continued)

Raw Materials	*Saheth-Maheth*	*Manwandih*	*Kalli Pachchhim*	*Trilokpur*	*Katinagara*
Copper/Bronze	coins	rings	coin, bangles	coin	
Iron		arrowhead, spearhead, nail, ring	implements	nail	
Semi-Precious Stones	beads			Carnelian beads, Agate, Jasper beads	
Ordinary stone				pestle, sling ball	
Shell				ear ring	
Ivory	seal	bracelet	bangles	bangles	

MAP-26


SITE WISE DISTRIBUTION OF RAW MATERIALS
IN UPPER GANGETIC PLAINS c. 300-500 A.D
LEGEND
Cu- Copper
L-Lapis lazuli
Fe-Iron
Qz- Quartzite
Bo-Bronze
Fa-Faience
Go-Gold
Q-Quartz
Ag- Silver
△ -Rock Crystal
A-Agate
Ss-Sandstone
Cr- Crystal
+ - Shell
Ch-Chalcedony
C- Carnelian
Ac- Aquamarine
Am- Amethyst
I - Ivory
HIMACHAL PRADESH
HIMALAYA
Garhwal
UTTRAKHAND
Hulas
Cu, Fe, I
DELHI
Ahichchhatra
Cu, C, Ch, Cr, I Am, A, Ac, Ss, Qz, Fa
Atranjikhera
Ss
Katinagara
C, A, J, +
Sankisa
Cu,Fe
Sonkh
Cu, Bo, Fe, C, Q, Ch, J, Go, A, L, +, Fa, Am, △, Ss
Mathura
Cu
Yamuna R.
Ganga R.
Sarda R.
Ghaghara R.
Trilokpur
Cu, Fe, I
Mahet
Cu, I
Sahet
Cu, I
Sravasti
Cu, Fe, Au, A, Cr, C, M, I
Kalli Pachhim
Cu, Fe, I
Manwandih
Cu, Fe, I
Hulaskhera
Cu, Fe, Go, Ag, +, Fa, I
Jajmau
Cu,Fe,C,Cr,K,
Musanagar
Cu,
Gomati R.
Area of Map
India
BIHAR
MADHYA PRADESH
78°
80°
82°
84°
30°
28°
26°
24°

Character of Sites and Distribution of Manufactured Objects

Some of the well-known urban sites of this period are Ahichchhatra, Atranjikhera, Mathura and Sonkh. Ahichchhatra is known as one of the capitals of the kingdom of north *Panchala* (Dikshit 1952; Gaur 1983:1; Srinivasan 1989; Hartel 1993). A defence wall seems to have been built in the post NBPW phase comprising four successive phases. Later excavations revealed two terraced temples, one of which belonged to the early Gupta period (Chakrabarti 1997: 193). Ahichchhatra was an ancient city dating back to the Janapada period. Its chronology ranged from the third century B.C. to the twelfth century A.D. (Sharma 1953: 138). The ruins around Ahichchhatra have a stupa in the west-northwest corner of the fortress (Chakrabarti 2007: 42). Buddhist shrines with rathas and a wheel shaped stupa has been noted here (Ghosh 1990: 152). The ancient city of Kannauj yielded terracottas mostly of the Gupta period, bone points, fragments of ivory bangles and so on (Chakrabarti 2007: 47). Mathura was a well known seat of the Kushana dynasty and continued till the Gupta period. In this period several religious edifices of Buddhist, Brahmanical and Jaina images have been reported from here. They are fine representation of the Gupta art styles showing high artistic standards (Ghosh 1990: 152). At Sonkh, rebuilt structures, grey stone reliefs, stone plaque with two letters of an inscription, pottery and fragments of red ware sherds, jar and vessels are found from the Gupta period levels (Hartel 1993: 71, 305, 332).

Sonkh in particular has yielded a variety of artifacts. Copper has been used for manufacturing beads, coins, antimony rods, and bowls. Bronze is present at Sonkh as knob (Hartel 1993: 286). Iron has been used extensively at Sonkh (Hartel 1993: 286). The artifacts are mostly implements and weapons such as arrowheads, spearheads, knives, hooks, clams, chisels and so on. Artifacts of gold are also seen at Sonkh. They are mostly beads, beaded ring, disc, flat wheels. The most impressive variety is seen in the range of semi-precious stones at Ahichchhatra and Sonkh. These are beads of chalcedony, agate, carnelian, jasper, crystal, beryl, and rock-crystal and so on (Hartel 1993: 298; Dikshit 1952: 35-52). Lapis lazuli, shell and faience beads are found only at Ahichchhatra and Sonkh. Sandstone has been used in the form of plaques, mill wheel and sculpture at Sonkh and Ahichchhatra (Hartel 1993: 71, 14, 52, 46). Sonkh, however, stands out in terms of variety of resource-use.

The second tier of settlements comprises Hulaskhera, Musanagar, Trilokpur, Hulas, Manwandih, Kalli Pachchhim and Katinagara (Tiwari, Hemraj and Srivastava 1995:95-129; Hem Raj 1994; Tewari 2006; Hemraj 1995: 37-54; Tewari, Srivastava 1995-6; Tewari 1999; I.A.R. 2001-02: 241). Of these, Hulaskhera revealed a citadel dating to the Gupta period, along with a few brick structures of the Kushana period (I.A.R. 1980-81:71). Manwandih in the Sidhauli district is traditionally said to be the ruins of an old fort built by king Mandhata, a legendary king of Ayodhya (Hem Raj 1994-5:40-1). The excavations at Musanagar in Kanpur district have revealed a cultural sequence beginning from the pre-NBPW to medieval periods. Period V assigned to Gupta-post-Gupta age has yielded soft stone potteries like lid and dishes and a copper bowl (Tewari and Srivastava 1995-6: 72). At Kalli Pachchhim, terracotta human figurines, red ware storage jars and black ware ceramics are assigned to the fourth to the eighth century A.D. A rammed mud floor with burnt patches and a small pit besides pot-sherds were found on the floor (Tewari 1999: 17, 23). The mound of Trilokpur is situated on the border of Sravasti and Baharaich district.It has cultural periods from NBPW stage to early medieval period. Terracotta human and animal figurines have been found from the Gupta period layers here along with other artifacts (Tewari 2006: 139). At Katinagara in the Etah district, Period III is assigned a date between c. 200-600 A.D. Kushana-Gupta pottery such as vases, sprinklers, storage jars and moulded bricks have been found. Terracotta ear stud and other artifacts such as beads of semi-precious stones have been found (I.A.R. 2001-02: 241).

With regard to resource-use in the second tier, Hulaskhera has the largest number of artifacts. Copper in the form of antimony rods and coins and iron as implements and arrowheads, spearheads and nails are common to all the three sites. Gold plaque, pendant and beads and silver coins have been found at Hulaskhera. Semi-precious stones beads have been left unspecified. At Katinagara beads of carnelian, agate and jasper have been found (I.A.R. 2001-02: 241). Shell bangles and faience beads are found in Hulaskhera and Katinagara. Also, ivory and bone artifacts in the form of awls, comb, bracelet, bangle, arrowheads and beads have been found at Hulaskhera and Manwandih (Tewari, Hemraj and Srivastava 1995-6: 129; HemRaj 1994-5:47). An interesting use of ivory is seen at Hulas in the form of a scale (I.A.R. 1981-2: 74).

Several explored sites have been discussed extensively by Chakrabarti in *The Archaeology of the Ganga Plains* (2007: 18). Chandau was a site, which, on the basis of pottery was known to have continued till the twelfth century. Its major thrust of occupation is assumed to be in the Gupta-post-Gupta period (Chakrabarti 2007: 18). Sabaiya, Arron ,Bahai and Sultanpur are sites that have produced red ware sherds and pottery remains of the Gupta-post-Gupta period (Chakrabarti 2007:18,20,21,22).Rampur-Barara; Gangaganj has a structural mound full of brickbats of Gupta–post-Gupta period (Chakrabarti 2007: 19).Sites such as, Rahi, Shah, Nidura and Gamhiri have revealed with temple remains of Gupta-post-Gupta periods (Chakrabarti 2007: 20); Paina Kalan has some terracotta fragments of this period (2007: 20) Bhitargaon has the famous temple site of the Gupta period (Chakrabarti 2007: 22-23); Sanchankot has yielded a terracotta head of the Gupta period (Chakrabarti 2007: 23, 29); Nimsar has revealed a a terracotta panel, stylistically attributed to the fifth-sixth century depicting Karttikeya. On basis of this it could be ascertained that there were Gupta period temples at Nimsar (Chakrabnarti 2007: 24). As observed by Chakrabarti (2007: 29), in many cases, the settlements covered in this survey were important centres of artistic activity of the Gupta period (In the vicinity a village called Kottari Khera, Jaina ruins of the Gupta period has been found ; At Dilwari, a Gupta period inscription was reported (Chakrabarti 2007: 42). Bhaisi in the Hardoi-Kannauj sector was an imposing village with number of temples, Gupta period terracotts are strewn at the site (Chakrabarti 2007: 51).

Sravasti and Saheth-Maheth in Baharaich district are religious sites. They contain religious structures related to Buddhism. Sravasti is an important religious center of the Buddhists ranking next to Bodh Gaya.The ruins consist of two distinct units Saheth, the Buddhist establishment that has often been identified with the Jetavana monastery and Maheth, is a fortified city adjacent to the monastery (Ghosh 1990: 419). The city is known for its association with the life of the Buddha. Period III at Sravasti yielded red ware and was represented by rudimentary house complexes of Gupta-post-Gupta period with masonry work. The site yielded terracotta human and animal figurines, mould, seals and sealings (I.A.R. 2001-02). At Sankisa, Cunningham (1968:35) found many Buddhist sealings of the Gupta-post Gupta

period here. Some other sites with Buddhist remains in the region are, Bhuteshwar and Bulanshahr. At Bhuteshwar, a considerable number of stupa railings, pillars with Yakshinis are noted. The donors' inscriptions mention the reign of kings of the Kushana and Gupta dynasty (Chakrabarti 2007: 93). At Bulandshahr a number of Gupta coins were recovered recently. At the site of the original settlement (Balai Kot), west of the town, Buddhist remains were dug up. (Chakrabarti 2007: 99). Indore (ancient Indrapura) a few miles from Anupshahr, is the site of an ancient sun temple indicated by a copper plate inscription of Skandagupta in the fifth century A.D. It has three large mounds at Kundanpur, Ahirpur and Vaidyapur with temple ruins in each of them (Chakrabarti 2007: 99).

The resources used at these religious sites are limited. However, structural remains such as pillars, stupas, monasteries and railings and sealings are some of the remains reported from these sites.Copper coins and beads are found at both the sites, the use of iron is seen at Sravasti. The artifacts are knives, blades, arrowheads and slag. Semi-precious stones such as, agate, carnelian and crystal bead are found at Sravasti. Marble in the form of bowls have been recovered from Sravasti. The other artifacts are bone dice and ivory seal at Saheth-Maheth.

Raw Materials Available Within The Sub-Region

The presence of agate, ivory and sandstone has been noted on p.62-63.

Raw Materials Available Outside The Sub-Region

The presence of amethyst, (Central India) on pg. 104, marble , beryl , silver , copper and faience, (Rajasthan) on 30, 104, and 115 , shell, carnelian (Gujarat) on pg. 64, 116-7, lapis lazuli (Afghanistan) on pg 31 has been noted previously.

RAJASTHAN

Iron

Deposits of iron ore are noteworthy in Jaipur in the Karwar near Hindon, Alwar and Udaipr (Erskine 1908: 53).

Rock Crystal

It is occasionally met with in the Rajmahal hills of Jaipur (Erskine 1908: 54).

Epigraphic, Numismatic and Literary Linkages

The Upper Gangetic plains were obtaining a large number of raw materials from outside its sub-region. These were Rajasthan, Gujarat and central India. Chandragupta II is known to have defeated the Western Kshatrap ruler Rudrasimha III in c.380 A.D. He annexed Gujarat and Malwa to expand the empire (Altekar and Majumdar 1986: 63). The political links, thus must have facilitated economic exchange. Silver coins of Kumaragupta were found from Kheda, Anand, Morvi and Bhavnagar. Finds from Kumarkhan of Ahmedabad district included gold coins of Samudragupta, Kachhgupta and other Gupta rulers (Rajyagor 1982: 79). The Junagarh rock inscription of Skandgupta in the Kathiawar peninsula also testifies to Gupta hegemony in the region and speaks of his victory over the Hunas (Bhandarkar 1981: 296). The Udayagiri Inscription of Chandra Gupta II testifies to the monarch's conquest of Eastern Malwa. The conquest of Western Malwa is probably hinted at by the epithet "Simhvikranta-gamini" resorting to (as a vassal of) Simha Vikrama (Chandra Gupta II) applied to Naravarman of Mandasaur (Raychaudhuri 1996: 451-2). The Allahabad Pillar inscription too elaborates Samudragupta's route that passed through central India for his expedition as far as Kanchi in southern India (Bhandarkar, 1981: 232). These epigraphic references possibly indicate the reach of the Gupta rulers as far as Gujarat and Central India.

The Malavas, Arjunayana and Yaudheyas were the tribes that inhabited different parts of Rajasthan in third century. They are named as tributary kings of the Gupta monarch in the Allahabad Pillar Inscription of Samudragupta. Their independent status ceased by the fourth century A.D. with the advent of Samudragupta on his expedition of the political unification of the country (*dharani-bandha*) as described by Raychaudhury (1996: 471). In the subsequent period, coins of the Gupta rulers have been found in different places in Rajasthan. In Sirohi, Ajmer, a large hoard of about two thousand gold coins of Gupta rulers was found in Bayana in Bharatpur district. This is the largest discovery of Gupta gold coins; the Naglachhela hoard contains coins of Chandragupta I, Samudragupta and Chandragupta II (Dhoundiyal 1966: 32; 1967: 51; Goyal 1994: 31; Hooja 2006: 134, 135).

It may be summarized from the above discussion that the Upper Gangetic Plains in the Gupta period was procuring most of the resources it used from outside its sub-region. The resources available within this zone were agate, sandstone, bone and

ivory. All other resources were procured from outside the region. Rajasthan, for instance, was the probable sources of marble, beryl and faience, silver, copper, iron and rock-crystal. Shell was most likely obtained from the coast of Saurashtra in Gujarat. Central India to its south is an abundant source of different types of semi precious stones such as amethyst, agate, carnelian and chalcedony. These were possibly accessed by the Upper Gangetic Plains. Lapis lazuli was most likely obtained from Afghanistan either directly or through intermediaries. The region does have an impressive resource usage in the urban areas. Most prominent of them is Sonkh and Ahichchhatra. Manufacturing activity in iron is noted at sites like Sravasti and Kalli Pachchhim. Small sites have also revealed evidence of manufacture in iron.

Middle Gangetic Plains

The Middle Gangetic plains is a region where evidence of urbanization as well as possibly state formation occurs at an early date. Various dynasties namely, Sungas, Kanvas, Indo-Greeks, Kushanas and Guptas have ruled this region and structural and artifactual remains of their rule have dotted over the different sites here. The different sites in the Middle Gangetic plains are Taradih, Nalanda, Chirand, Agiabir, Pataliputra, Bhita, Kumrahar, Rajghat, Kausambi, Champa, Vaisali, Kesaria, Aktha and Bhitari (Mani 2008; Verma 2007; Singh, P. and Singh, A 2004; Sinha and Narain 1970; Marshall 1911-12: 48-92; Altekar and Mishra 1959; Narain and Singh 1977; Sharma 1949-50; Prasad 1987; Deva and Mishra 1961; Jayaswal 2009; Jayaswal 2001).

Sitewise Distribution Of Manufactured Objects

The different raw materials used in the region have been elaborated in chart 7b. These are copper, bronze, iron, gold, silver, agate, crystal, carnelian, quartz, chalcedony, coral, pearl, jasper, amethyst, lapis lazuli, granite, chert, sandstone, marble, slate, soapstone, steatite, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: The concentration of crucible, ash bands, iron slags in large quantities, lumps, and uncast smelted lumps of iron were found in a section of the residential complex at Bhitari. This indicated that this part of the complex was used for iron smithy and was the residential area of the blacksmiths (Jayaswal 2009: 150, 187).

Chart 7b
Middle Gangetic Plains—c. 300---500 A.D.

Raw Materials	*Taradih*	*Aphsad*	*Agiabir*	*Bhita*	*Kumrahar*	*Kausambi*	*Jhusi*	*Maner*	*Pataliputra*
Copper/Bronze	ear rings, fingerrings, bangles, antimony rods	Bronze bangles	antimony rods	Bronze ring, saucer, bowl, bangles, pendant statue, tripod,bell,cup basin, lid	antimony rods, amulet, bangles, bracelet	Bronze seal, Copper beads	vessel	coins, wire, seal	coins
Iron	knives,nails, needles, bar sickels,pans, axe	chisels, nails	nail,spear-head celts,arrow-heads,rings, door handle, spearheads	arrowhead, padlock,spear, ladle,plate,	implements chisel,sickle, ring		nails, arrowhead	objects, slag	nails, daggers
Gold							coin		
Semi-Precious stone	beads	beads	Agate, Quartz beads	Crystal pendant	Agate,Carnelian, Chalcedony beads, Quartz Crystal beads, Quartz pendant	Chalcedony, Jasper beads, Quartz pendant	beads	beads	
Ordinary Stone	Chert beads, images			Sandstone relief, Marble casket Slate celt, lid, Sandstone celt	Sandstone cross-. bars, Slate incised piece	grinders, mullers		bangle, weight	
Steatite/Soap-stone				seal-die, casket lid	pot				Soap stone matrix
Shell						bead	bangles, cowri		
Ivory				seal, seal-die	dice				dice

Chart 7b (continued)

Raw Materials	*Rajghat*	*Sarnath*	*Vaishali*	*Narhan*	*Chirand*	*Nalanda*	*Champa*	*Nandangarh*
Copper/Bronze	objects, antimony rods	statute, vessels	objects, antimonyrods, rods,bangle, nail,ring,bell, finger ring	antimonybeads, rings, beads, fish hook	coins,Bronze antimonyobjects rods,Bronze figure	antimony rod,Bronze figure		
Iron	objects		rings,objects, nails celts,awls	spearheads, chisels,nails, arrowhead	spearheads		nail	knives,daggers, arrowheads
Gold	coins, objects					coins, coin mould		
Semi-Precious stone	Quartz Crystal, Carnelian beads, Crystal,toggle beads,Agate, Jasper bead, pendant,Quartz, Amethyst, Chalcedony beads		Amethyst bead, Jasper Beads, Chalcedony beads, Carnelian pendant, Crystal beads, Agate beads, Quartz beads, Jasper weights	Agate, Carnelian pendants, beads, Quartz beads		Carnelian bead		
Pearl			bead					
Ordinary Stones	Chert beads, stone balls	Sandstone image, capital	Granite bead, Chert pendant, bangle piece, pestle	Chert beads			beads	
Lapis Lazuli	beads							
Faience	pendant, toggle beads				beads			
Steatite/Soap-stone			bead, pendant, disc, soapstone beads		beads			
Shell/Coral	Coral beads, Shell pendants, beads, bangles		bangles, pendant, bead, Coral beads					
Ivory	beads, pendant		objects, bangle piece		dice		objects	

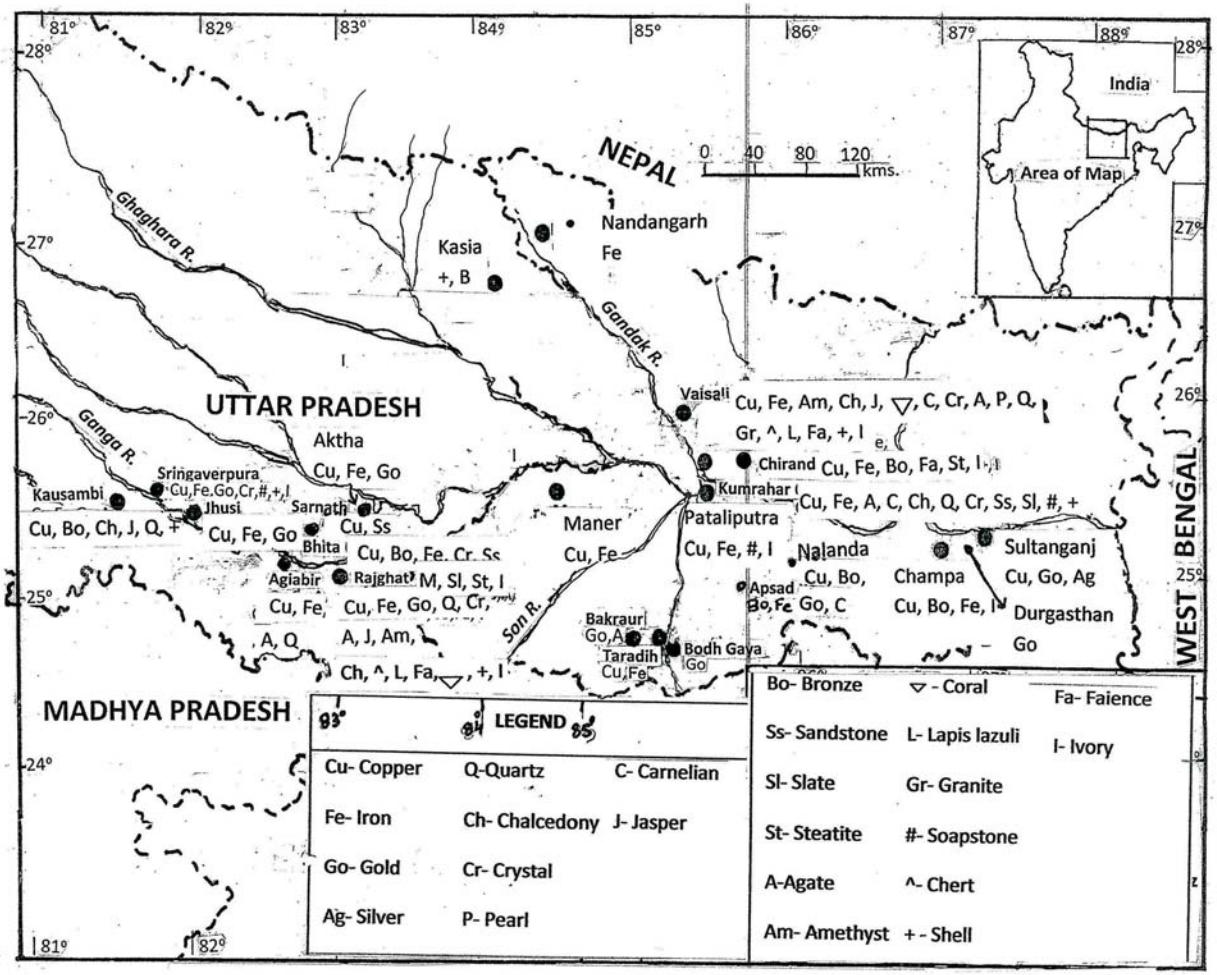
Chart 7b (continued)

Raw Materials	*Durgasthan*	*Masaon*	*Kesaria*	*Erich*	*Kasia*	*Shahjahanpur*	*Musanagar*	*Raja Nala* Ka Tila
Copper/Bronze		coins mirror with handle and hook					bowl	arrowhead, bangle,ring
Iron			objects					artifacts, slag
Gold	coins,nose ornament, earring, chain pieces, female figurine			coin			mohurs	
Silver		coins					coins	
Ordinary Stone						Marble bangles, pendants, Sandstone sculptures		Soft stone lid, dishes
Shell/Conch					bangles			

Chart 7b (continued)

Raw Materials	*Sultanganj*	*Aktha*	*Bhitari*
Copper/Bronze	colossal image	bead, antimony rod, fish-hook	antimony rods, pin, bangle, ring, blade
Iron		arrowhead, blade-knife	nails, nut cutter, tooth-prick, sickle, arrowhead, dagger, sword, ring, slag, lumps, blades, rods, clamp, chisel
Gold	coins, ornaments, statuettes	coins	
Silver	coin		
Ordinary Stone		pounder, blade, celt	Sandstone column
Shell			bangles, cowri

MAP-27



SITE WISE DISTRIBUTION OF RAW MATERIALS
IN THE MIDDLE GANGETIC PLAINS c. 300-500 A.D.

Pottery: A small mound of pots and the accumulation of one type of pot arranged in a compact manner were noted at a site located away from one temple complex at Bhitari. It was identified as an ancient kiln and was possibly one of the pottery manufacturing areas of the site in the Gupta period (Jayswal 2009:45).

Bronze: Remains of a bronze smelting furnace have been found at Nalanda (Ghosh 1990: 157)

Character of Sites and Distribution of Manufactured Objects

The urban sites during the Gupta period are Vaisali, Bhitari, Bhita, Aktha (ancient Varanasi), Rajghat, Kumrahar, Pataliputra, and Kausambi (Deva and Mishra 1950; Deva and Mishra 1961; Jayaswal 2008; Marshall 1915; Jayaswal 2009; Narain and Singh 1977; Altekar and Mishra 1959; Sinha and Narain 1970; Sharma 1940-50). Vaisali in Muzaffarpur district is one of the oldest cities of India. It is an urban-cum-religious site. Its antiquity goes back to the time of the Buddha and beyond. It is also known as the site of the second Buddhist council. The citadel site is known as Raja-Visala–Ka-Garh (Krishna Deva and Mishra 1961: 1). Cunningham, on the basis of the accounts of the Chinese pilgrims, identified Basarh with the city of Vaisali of Buddhist tradition. A large number of seals were discovered in excavation that has inscriptions mentioning Vaisali as the capital of the Lichchhavi-gana and a prosperous city during the age of the Buddha (Dilip Kumar 1986: 36). Vaisali was probably one of the district headquarters under the Guptas. This is evident from the seals of the Gupta officials found in the fort of Basarh (Bloch 1903-4: 88). A defence wall was noted at the Garh site in three phases. The third phase assigned to the late Kushana-early Gupta age was built of bricks identified as ruins of a military barrack (Dilip Kumar 1986: 71). Bhitari in Ghazipur district revealed the remains of brick temples of the Gupta period, parts of residential localities and a free standing sandstone pillar bearing the inscription of Skandagupta. Apparantly, Bhitari was a large settlement site of the Gupta- post Gupta period and is an urban-cum-religious site. The antiquities included, inscribed bricks, stone slabs, terracotta figurines, pottery of red ware such as bowl, basin, vase, lid, sprinkler and spouted pot (Jayaswal 2009:28-9, 54, 104). The imperial Guptas ruled from Magadha and made Pataliputra their capital. Interestingly the site located on the top of a mound is clear from the outskirts of the city. The whole

mound is virtually within the present city. Excavations have revealed structure of an *Arogyavihara,* a monastic cum sanitorium complex. One of the seals discovered from Kumrahar refers to the existence of an *Arogyavihara* (Sinha and Narain 1970:1, Chakrabarti 2001: 176; Brajmohan 1987: 31, 90). At Aktha, a suburban locality of ancient Varanasi, brick structures between c.300-700 A.D. were exposed. Also, sealings and gold coins of Gupta kings Chandragupta, Kumargupta and Skandagupta and human figures with elaborate headdress of the classical period. Pottery such as sprinkler, inkpot bear distinct traits of the Gupta period ceramic collection and a seal that has both Kushana and Gupta Brahmi characters were found (Jayaswal 2009: 9, 36, 58). Excavation exposed the remains of a rampart that was continually raised in height till the last phase of the site when the Huns destroyed the whole complex (Ghosh 1990: 212). Fa-hien who visited in the early fifth century A.D. has mentioned a monastery called *Gositarama* where the Buddha once dwelt (Sharma 1949-50: 7-8).

The Jain and Buddhist texts both mention eighteen guilds of different crafts in cities such as Vaisali and Rajgriha. Smith shops (‘kammasala’) of ironsmiths are mentioned in the city of Vaisali in Avassay, one of the Mulasutras of Jaina Canon (Jain 1984:132). The Mehrauli Pillar inscription of king Chandra is an established metallurgical wonder of the fifth century A.D. It demonstrates the genius of the iron smelters and iron smiths of that age (Joshi 1989: 22-23). This was a flourishing period for guilds in north India as attested by numerous sealings of sresthi-nigama (17); *sresthi- sarthavaha-kulika-nigama* sealings (274) that have been discovered from Basarh (Thaplyal 1972: 226). It lends credence to the views of Krishna Deva and Mishra that the Garh site at Vaisali was probably a market place and commercial centre from third centurie B.C. to the Gupta period (Dilip Kumar 1986: 101). During this period, metal casting reached a very high level of technical excellence. Metallurgical skill is aptly demonstrated in the casting of life-size copper images of the Buddha of the fifth century A.D. These were recovered from Sultanganj, district Bhagalpur. Kurkihar in Gaya district has yielded two hundred and forty bronzes of the Gupta period (Lal 1956: 54, 57).

The use of various resources is impressive at these sites. Copper objects are varied in form. The objects are as coins, bowls, antimony rods, discs, plates, nails, bell, finger rings

and so on. Bronze has been used as seals and rings. Iron artifacts are surely lesser than the copper ones. They are in the form of nails, rings, arrowheads, spearheads, knives, daggers, clamp, chisel, sickles and so on. Gold coins are found at Rajghat.

The use of semi-precious stones is also elaborate at the urban sites. They are used mostly as beads, pendants and weights. The raw materials are agate, crystal, carnelian, quartz, chalcedony, coral, pearl, jasper, amethyst and lapis lazuli. Of these, pearl beads have been found at Vaisali and lapis lazuli at Rajghat. Amongst ordinary stones the urban areas have used different raw materials. They are sandstone, slate, marble, granite and chert. Artifacts vary from relief, celts, beads, pestle, mullers and bangle. Steatite beads, bangles are seen at a few sites as Bhita, and Vaisali. At Pataliputra we find a matrix of soapstone.Shell has been used as bead, bangles at Vaisali, Rajghat and Kausambi. Faience and coral beads have also been found at Rajghat. Ivory is common at Rajghat, Bhita, Vaisali and Kausambi in form of beads, disc, bangles, pendants and pieces. The use of various raw materials as well as their variety is seen at the urban sites in the Gupta period.

The other urban sites of this period are Masaon, Kasia, Chirand, Narhan, Aphsad and Jhusi and Sultanganj (I.A.R. 1959-60:65; 1970-1: 61; Sharma 1953:143, Vogel 1904-05: 34-5, Shastri 1910-1:64-71; Singh 1994; Page 1924-5:60; Prasad 1987: 66). Chirand in Saran district had a gap between Period IV (c.200 B.C.-300 A.D.) and Period V (c.700-1200 A.D). The site seems to have been deserted in between the two periods for a long time as is evident from the sterile layer between Period IV and Period V along with the absence of antiquities of the Gupta period (Verma 2007: 13). However, a turn around was noticed with the discovery of a terracotta sealing with characters of Gupta Brahmi of fourth to fifth century A.D. It might indicate the presence of Gupta strata in and around the Chirand mound as opined by Verma (2007: 163). Masaon revealed poor structural remains of the period and the site was abandoned after the Gupta period (I.A.R. 1967-8: 47). The other sites of this region are Kesaria, Raja-Nala ka Tila, Sapaur and Durgasthan. At Narhan, pottery, terracotta heads with typical Gupta features are found. A star shaped figure of ‘Mother Goddess’, toilet objects, toy cart besides other artifacts are noted in this period. The structural remains were however robbed (Singh 1994: 27, 36).

The resource usage at these sites is similar to the large urban sites. However, the number of artifacts and the variety of raw materials used are scaled down considerably. Copper has been used at all the small sites in the form of vessels, coins, beads and antimony rods. A bronze figure has been found at Chirand and Champa. Iron has been used at all these small urban sites in form of weapons and implements. Their usage is similar to those of the urban areas. Jhusi has a long chronology from pre-NBPW period to the medieval period as indicated by the antiquities (Mishra, Pandey and Pal 1995-6:65). Gold coins are found at Jhusi and silver coins from Masaon and Sultanganj. Agate, quartz and carnelian have used at Narhan as beads.

There are several explored sites in the region.Among them, Bheski and Sultanpur-Khas have yielded pottery and brickbats and structural mound datable to the Gupta-post-Gupta period; At Mankameshwar/ Bhatpura, rock shelters in the hill contain Gupta period and later inscriptions. Garhwa/Gada, beyond Allahabad along the Yamuna (Chakrabarti 2001:260) has a massive temple complex containing a number of temples between the Gupta period and tenth century A.D. This is a well known site because of its rich Gupta period and later sculptures. At Bhuili, near Benaras-Roberstganj area, Cunningham has noted inscriptions of the Gupta period and later in the rock-shelters. Robertsganj-Panchmukhi hill shows architectural fragments of the Gupta period and later and has a temple dated to the period. At Kahayun in Bhagalpur sector was found an inscribed stone pillar and an old well of this period. The inscription records the dedication of '*Tirthankara*' images during the reign of Gupta king Skandagupta. Jaina figures are sculpted on the pillar. Mahuli (Maghar-Susipar) shows a fortified brick enclosure. This fortification was probably dated to the Gupta-post-Gupta period. Rajaona-Balgudar-Jayanagar in the Lakhisarai to Jamui sector has a number of sculptures, a Gupta period temple in ruins dated to the fifth- sixth century A.D. (Chakrabarti 2001: 255,259,260,261,237,239, 240, 216, and 221,172). However, worth noting are some of the interesting finds from some of the explored sites. Gold coins and mohurs have been found from sites as Durgasthan, Kesaria, Kasia and Shahjahanpur. Marble bangles and pendant and sandstone sculptures have been found at Sapaur (I.A.R. 1959-60:65; 1970-1: 61; Sharma 1953:143, Vogel 1904-05: 34-5, Shastri 1910-1:64-71; Page 1924-5:60).

Among the religious sites are Taradih, Nalanda, Agiabir, Kumrahar, Sarnath and Sultanganj. The mound in the vicinity of which the Mahabodhi temple stands revealed seven cultural periods. The Gupta period antiquities include numerous stone objects such as beads, votive stupas, Buddha's image, chhatravalli, terracotta beads, seals and sealing (Sinha 2000: 196,202). Gold coins of Gupta rulers are reported from Gaya region (Singh 1991: 220). Agiabir in Mirzapur district is another religious site with Buddhist structural activity of the Gupta-post Gupta period (Singh, P and Singh, A. 2004: 42). Kumrahar was the ancient city of Patna and part of one of the important cities of early India (Altekar, Mishra 1959: 3). Here, a stupa was revealed along with stucco gandharvas, mithuna figures and Buddha figurines. It seems to be a part of a facade of the Gupta period chaitya hall (I.A.R. 1954-5:19). Sarnath was the site where Budhha gave his first sermon. A Gupta period temple with rectangular chapels of the fourth century A.D. was found here. Other statues bearing dates of Gupta period were also found (Sharma 1953: 143). Nalanda, the famous centre of Buddhism, has an ancient history dating from the sixth-fifth century B.C. Pali Buddhist literature contain many references to Nalanda where Buddha had halted in course of his journeys. Some sources give Nalanda-gramaka half a yojana distance from Rajgriha, as the birth place of Sariputra (Ghosh 2008: 3). Monasteries of Nalanda were primarily the creation of Gupta Emperor Kumargupta I. This receives confirmation from the fact that, Fa-hien the Chinese pilgrim who visited in early fifth century A.D. does not mention the monastic cells of Nalanda (Ghosh 2008: 4). Excavation over a large area revealed many monasteries, stupas, shrines and temples. At stupa number 3, a Buddha shrine exists on top of most stages of the structure. This clearly indicates its association with the Sariputra-chaitya (Mani 2008: 15). At Sultanganj in Bhagalpur district, a relic stupa dated to the fourth century has been unearthed. The site had a quadrangular brick mound and remains of a large Buddhist monastery dated to the fourth-fifth century A.D. (Sinha 2000: 195; Prasad 1987: 83). At Sringaverpura in the Allahabad district terracotta figurines are ascribable to this period. A rock cut cave of the Gupta period at Rajgir in the Nalanda district has been discovered (Brajmohan 1987: 175).

Amongst the different artifacts recovered, the number of copper and iron artifacts at Taradih, Nalanda, Sultanganj yielded copper coins, bronze objects besides and the

sandstone capital at Sarnath are found. A solitary carnelian bead, Gupta gold coins and a coin mould has been found at Nalanda (Ghosh 1990: 156). Agate, quartz and carnelian have used at Agiabir as beads. Colossal Buddha images in copper and gold coins of Gupta rulers, ornaments and statuttes have been found from Sultanganj. The high degree of perfection achieved in the copper Buddha images suggests a continuous period of activity in casting of metal images (Prasad 1987: 66).

Raw Materials Available Within The Sub-Region

The Middle Gangetic plains have a limited quantity of resources. These are alluvial gold and ivory and tin. The occurrences have been noted on 74.

Lead

Bhagalpur Division: Lead ores principally argentiferrous galena, have been found in the Gouripur mine with galena, Dudi jor, Korda, Gonora, Kejurea and Khurekar. Lead with galena is found in the hill tracts of the Chakai pargana and a protoxide of lead in beds of Kharagpur hill streams (I.G.I. Provincial Series: Bengal 1908: 152).

Monghyr District: Occurences of lead have been noted near Kharagpur hills, Chakai pargana, which have galena containing a small percentage of silver (Ball 1881: 286, 290).

Limestone and Marble

Crystalline limestone occurs in metamorphic rocks of Mirzapur. Marble is quarried near Rohtasgarh on the Son river (Ball 1881:462).

Raw Materials Available Outside the Sub-Region

The presence of lapis lazuli (Afghanistan) and pearls (Tamil Nadu), shell and coral (West Bengal) has been noted 31.

CHOTANAGPUR PLATEAU

Semi-Precious Stones

The presence of iron, copper, slate and soapstone have been previously noted on page 75,86.

Presence of semi-precious stones as jasper, agate, carnelian and amethyst has been noted on p.75.

Epigraphic, Numismatic and Literary Linkages

The number of 'Puri-Kushana' coins discovered in the northern slope of Rakha hill in Singhbhum has lead Chakrabarti to postulate that these were issued by the the Kalinga rulers of fourth-fifth century A.D (Chakrabarti 1993:206). That the Gangetic plains were linked with the Chotanagpur plateau is well known.

It appears that after the decline of the Kushana Empire, the descendants of the Scythian governors (Satraps) known as Murundas established themselves in south Bihar in the second-third centuries AD. The Allahabad Pillar inscription describes the Chotanagpur region as 'land of the Murundas". Samudragupta in his journey to the *Dakhshinpatha* had possibly passed through this region (Sinha 1974: 771). Several sculptural and architectural remains of the Gupta period have been found in the Chotanagpur region. The earliest sculptures in the region were not before this period. Also, the Vishnu temples of Aphsad (Nawada district) Deo Barunarak temple and Mundeshwari temple of Rohtas district are important landmarks of temple construction in the Gupta period (Bhengra 2007: 71). A modern Shiva temple in the Rajoana in the Lakhisarai-Jamui region is known to be built on the ruins of a Gupta period temple dated to the fifth-sixth century A.D. (Chakrabarti 2001: 172) At Sarikela, an important township in Singhbhum district, there is a set of Sapta Matrikas. Though these had begun to be sculpted during the Kushana period, yet it is not until the Gupta period they had acquired the distinct attributes. Stylistically, these are dated to the sixth-seventh century A.D. (Bhengar 2007: 76).

The trade network all along the east coast from north coast of Sri Lanka in the south to Chandraketugarh and Tamluk in Bengal in the east has been discussed by H.P.Ray (1989: 44; 1987-1988: 81) with the distribution of the Rouletted ware (1^{st}-3^{rd} c. A.D.) From the study of inscriptions of northern Sri Lanka, Ray has observed that pearls and gems formed a major item of trade (Ray 1987-88: 81-82). Huien Tsang has noted in his accounts that Vanga must have exported pearls (after importing them) as observed by Ranabir Chakrabarti (2001:202). Interestingly, a similar reference can be noted in Kalidasa's *Raghuvamsa.* It refers to the gift consisting of the best of pearls by the Pandyan King to the hero Raghu on his return from Lanka. Also, the navigational capabilities of the Vanga people have been noted by the poet (Upadhyaya 1985: 521-23). It certainly indicates the possibility of the procurement of pearls as a trade

commodity from the Pandyan country in south India through Vanga to Taxila in the northwest. The middle Gangetic plains formed an integral part of the northern route that connected the northwest to the Gangetic plains.

The Middle Gangetic plains in the Gupta period were utilizing some of their own resources on the one hand and on the other were in contact with neighbouring regions for obtaining resources. The resources available within the region were, gold, marble, and ivory. The other resources such as copper, iron, sandstone, soapstone, slate and the varieties of semi-precious stones (quartz, agate, carnelian, jasper) were possibly obtained from the Chotanagpur region. Lapis lazuli was possibly obtained via long distance trade. Pearls, shell, coral were possibly procured from the Tamil land as evident from the distribution of the rouletted ware. The volume of these artifacts as well as their varieties show that during the Gupta period the middle Gangetic region was mostly dependent on the Chotanagpur region for procurement of resources. It is noted by Chakrabarti that one of the earliest known trade routes of India through Rajagriha to Pratisthana. It is suggested by him that the Chotanagpur resources were being mediated through Rajagriha (Chakrabarti 1998: 89).

There is evidence of manufacture in the given period in the form of iron smelting worshops at Bhitari and furnaces of bronze smelting at Nalanda that has produced some of the finest bronze images of the period. That, the entire region was a flourishing manufacturing hub as also commercially dynamic in this period is further attested by the discovery of numerous sealings and inscriptions from Basarh. They indicate that merchants and craft guilds functioned with dominance in towns of Vaisali, Bhita and so on. As many as two hundred and seventy four seals have been discovered from Basarh. Most of them belong to the nigama (guild of sresthis), sarthavahas (caravan traders) and kulikas (artisans). In this context it might be postulated that the urban areas may have been major trade points for exchange activity.

Lower Gangetic Plains and the Chotanagpur Plateau

The historical sites in the Lower Gangetic plains are spread over a vast area. The region covers the Indian state of Bengal and a large part of Bangladesh. The prominent city of this region is Pundravardhana (modern Mahastangarh). It was

Chart 8 b
Bengal and the Chotanagpur Plateau—c. 300—500 A.D.

Raw Materials	*Paharpur*	*Mainamati*	*Rangamati*	*Mahasthangarh*	*Balai Dhap*	*Kotalipara*
Copper/ Bronze		dishes, coins, Bronze image			Gold plated Bronze image	
Gold		coins, rings	coins			coins
Silver		coins				
Semi-Precious Stone				unspecified beads, ornaments		
Ordinary Stone	sculptures	Sandstone image, gray Shale image				

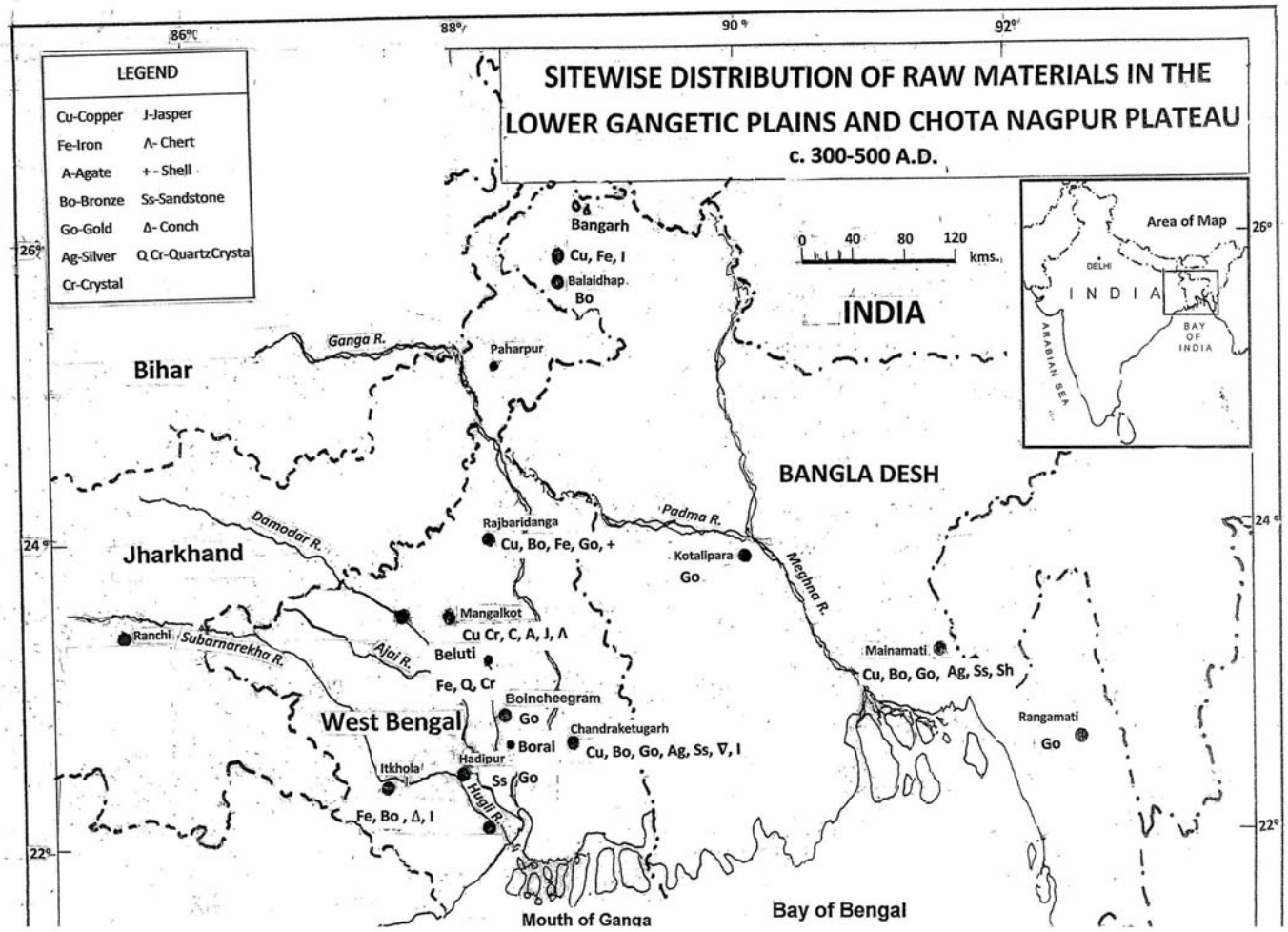
Chart 8 b (continued)

Raw Materials	*Chausa*	*Beluti*	*Mangalkot*	*Mahasthan*	*Rajbaridanga*	*Bangarh*	*Laxmihatirdanga*
Copper/Bronze	Bronze Images		objects		Bronze figure, Copper objects, rings, bangles	sticks	
Iron		slag pieces			objects	implements	
Gold					plate		coins
Semi-Precious Stone		Quartz Crystal, object	Crystal beads, Carnelian ,Agate, beads, Jasper beads				
Ordinary Stone			Chert beads	beads		beads	
Shell			beads		bangles		
Ivory						sticks	

Chart 8 b (continued)

Raw Material	*Mahanad*	*Hasnan*	*Boincheegram*	*Chandraketugarh*	*Itkhola*	*Hadipur*	*Bura-Burir Tat*	*Kankandighi*	*Boral*	*Gopalganj*
Copper/ Bronze				cast coins, rings, Bronze figure				coins		
Iron					axe					
Gold	coins	coins	coins	coins			coin		coins	coins
Silver				stone inlaid ring						
Ordinary Stone				Sandstone plaque, beads, saddle quern and pestle	beads, Buff stone, bowls	red Sandstone image				
Conch/ Shells				bangles	bangles					
Ivory				casket	bangles					

MAP-28


SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE
LOWER GANGETIC PLAINS AND CHOTA NAGPUR PLATEAU
c. 300-500 A.D.
LEGEND
Cu-Copper
Fe-Iron
A-Agate
Bo-Bronze
Go-Gold
Ag-Silver
Cr-Crystal
J-Jasper
Λ- Chert
+ - Shell
Ss-Sandstone
Δ- Conch
Q Cr-QuartzCrysta
0 40 80 120 kms.
Area of Map
INDIA
DELHI
BAY OF INDIA
ARABIAN SEA
Bangarh
Cu, Fe, I
Balaidhap
Bo
Ganga R.
Paharpur
Bihar
BANGLA DESH
Padma R.
Damodar R.
Rajbaridanga
Cu, Bo, Fe, Go, +
Kotalipara
Go
Meghna R.
Jharkhand
Mangalkot
Cu Cr, C, A, J, Λ
Ranchi
Subarnarekha R.
Ajai R.
Beluti
Fe, Q, Cr
Mainamati
Cu, Bo, Go, Ag, Ss, Sh
Boincheegram
Go
West Bengal
Chandraketugarh
Boral
Cu, Bo, Go, Ag, Ss, ∇, I
Rangamati
Go
Itkhola
Hadipur
Ss
Go
Hugli R.
Fe, Bo , Δ, I
Mouth of Ganga
Bay of Bengal
26°
24°
22°
86°
88°
90°
92°

included in the Mauryan Empire and continued even in the post-Gupta. Several inscriptions of the Gupta rulers are found in the region in the Pundravardhana signifying their hold over the territory. The other important sites are Rajbaridanga, Mangalkot, Tamluk, Bangarh and Chandraketugarh, Dihar. Terracotta objects and copper plates and sculptures of the Gupta period have been found at Paharpur and Biharail in Rajshahi district (Banerjee 1925-26:110; Chakrabarti 1992: 53).

Sitewise Distribution Of Manufactured Objects

The range of raw materials as per chart 8b are copper, iron, bronze, gold, silver, sandstone, shale and chert.

Evidence of Manufacture of Finished Products at Different Sites

Beads: Several unfinished beads, flaked stones as well as finished beads in crystal have been found in the Gupta levels at Mangalkot in Burdwan district (I.A.R. 1987-88: 113).

Iron: Iron slag was found close to the kiln on top of the natural soil at Beluti in Burdwan district (Chakrabarti and Hasan 1982:120-1).

Shells: At the Khana Mihirer Dhibi in Chadraketugarh, the temple complex has a few furnaces to burn shells for lime (Chakrabarti 2001: 138).

Character of Sites and the Distribution of Manufactured Objects

The urban sites in the region having cultural assemblages of Gupta period are Mahasthangarh, Rajbaridanga, Mangalkot, Chandraketugarh and Bangarh (Chakrabarti 1992:47, 50I I.A.R.1962-63:46; 1963-64: 63; Chakrabarti 1992: 53; Chakrabarti, Goswami and Chattopadhayay 1994:141-3; Banerjee 1925-26:110). Bangarh in the Dinajpur district is an urban site identified with Kotivarsa, famous as an administrative unit, a sub-division (visaya) of the Pundravardhana bhukti. The antiquity of Bangarh goes back to the Mauryas and contains Gupta period inscriptions and sculptures (Chakrabarti and Chattopadhya 1992: 135). This period layers at Bangarh showed evidence of well-rammed floors of brickbats and mud rampart wall (Chakrabarti and Chattopadhya 1992: 152). Rajbaridanga in the Murshidabad district was a significant urban site with a granary as well as fortification (I.A.R. 1962-3: 46;

1963-4: 63). On the basis of seals and other remains from the site it is identified with the Raktamatrika Sangharama described by the Chinese pilgrim Huien Tsang in the seventh century A.D. The monastery stood in the suburb of Karnasuvarna located in the neighbourhood of Rajbaridanga (I.A.R. 1965-6: 47). Stucco heads dated to the Gupta period were recovered from here (Das 1968:42). Mahasthangarh in the Bagura district has been identified with the ancient city of Pundravardhana. It was an important administrative division of ancient Bengal known from the copper plate inscriptions of the Guptas as Pundravardhana bhukti. The fortification of the site is dated to the Gupta period .The structures were made of well-baked bricks and a defence wall was unearthed with an inscribed clay seal of the Gupta period, indicating its date. The region has several sites. They are Govinda Bhita, and Bairagir Bhita respectively (Chakrabarti 1992:47, 50). Chandraketugarh in the twenty four Parganas district revealed the remains of a fortified township in the Gupta period and the prosperity of the site continued even later (Thakur 1980-1:140). It is locally known as Berachampa. As reported by Chakrabarti, K.N. Dikshit called it one of the earliest settlements of Bengal. The surviving portions of a mud rampart and a large structural mound are known as Khana Mihirer Dhibi. This is a temple dated to the Gupta period. Rouletted ware occurs extensively in the early centuries A.D. which has also yielded a Mathura red sandstone Bodhisattava head. Mud floors, terracotta ring wells and grain enclosures were discovered here. It is a site rich in terracottas, a few dating from the Gupta period (Chakrabarti, Goswami and Chattopadhya 1994: 142).The famous port of Tamralipti or Tamluk in Midnapur district was an important seat of learning as well as a commercial port town. Kushana-Gupta terracottas have been found here. The ancient city does not seem to have been surrounded by a mud rampart (Chakrabarti, Goswami and Chattopadhay 1994: 154).

At some of the sites, only terracotta objects and copper plate inscriptions of the Gupta period have been mentioned in the relevant publications. There is Biharail in the same district, which has also yielded sculptures (Chakrabarti 1992: 53); Dhanaidaha and Jagadishjpur in Rajshahi district have copper plate inscriptions. Mahasthan and Gitagram in Murshidabad have Gupta period architectural patterns, pottery, beads of stone and terracotta objects (Dikshit 1928-29: 90, 92, 96 and 98). Bhasu Vihar and Deora in the Bagura district too have terracotta and sculptures dated to the Gupta

period (Chakrabarti 1992: 44 and 53). Mangalkot in Burdwan district has yielded terracotta objects of the Gupta period (Chakrabarti 1992: 53), at Damodarpur, a few copper plate inscriptions have been reported (Chakrabarti 1992: 54). Bahiri in the Birbhum district too has yielded Gupta terracotta objects (Chakrabarti, Goswami and Chattopadhya 1994: 154).

Copper artifacts are found mainly at urban sites. They are, Rajbaridanga and Chandraketugarh. The finds are mostly coins, dishes, bowls, rings and bangles. A few bronze images are found at these urban centers. The above mentioned sites have also yielded artifacts of gold and silver. They are in the form of coins, rings and plate.

Amongst the semi-precious stones, at Mangalkot we find beads of agate, crystal, carnelian and jasper. Sandstone has been used at Chandraketugarh in the form of images and plaques. Chert beads have been found from Mangalkot. Shell and conch beads, bangles have been recovered from Chandraketugarh, Mangalkot and Rajbaridanga. Ivory and bone caskets and beads are also from urban areas.

The second tier of settlements in the lower Gangetic valley, have quite a few sites. They are Balai Dhap, Itkhola, Hadipur, Boral, Kanakandighi, Boincheegram and Hasnan (Chakrabarti 1992: 53; I.A.R. 1964-65: 52; 1965-6:59-60; I.A.R. 1981-2: 90; Chakrabarti, Goswami and Chattopadhay1994:-148-9; I.A.R. 1976-77:73). It is worth noting that several of these sites have produced gold artifacts mostly in the form of coins. These are Boral, Buraburirthat, Gopalganj, Boincheegram, Hasnan, Mahanad, Laxmihatirdanga and Kotalipara. (Chakrabarti, Goswami and Chattopadhay1994:-120-1, 148-9, 153; Chakrabarti 1992:158) Itkhola in the 24 Parganas is an urban settlement regarded so on the basis of a rampart found in the locality (I.A.R. 1964-65: 52). Boral has yielded Maurya-Sunga, Kushana and Gupta terracottas in profusion, also Deulpota and Rayer Chak have yielded a Gupta terracotta, a toy cart, A hoard of Gupta coins were discovered in Muhammedpur in Jessore. Eight inscriptions of the fifth-sixth centuries have been found in the Barind tract. Scrolls with Gupta period designs have been found in the temple at Jateshwar in Mainaguri in Jalpaiguri district. A strong brick built fortified complex at Mendibari in Jalpaiguri district has yielded tile shaped bricks of the Gupta post Gupta period. Dehabanda on the Raiganj-Balurghat road is another site of this period with a number of mounds. The major

mound seems to date to the Gupta-post-Gupta period (Chakrabarti 2001: 136,137, 139, 142, 149, 150, 157,107, 61, 62, and 79). In the twenty four Parganas, a hoard of Gupta period coins was found at Kalighat (Chakrabarti 2001: 131).

In the Chotanagpur plateau region, numerous art specimens of the Gupta period in the vicinity of Sultanganj, Patharghata, Kheri and Mandara hill area were found (Bhengra 2007: 72). Bronze figures of Gupta period were found from Chausa, Buxar (Bhengra 2007:111). The Allahabad inscription of Samudragupta refers to the Chotanagpur plateau as the 'land of the Murundas'. Samudragupta in his journey to the south had passed through the Chotanagpur region (Bhengra 2007: 58). Although no artifacts are reported, some of the sites associated with the Gupta and immediate post-Gupta period in the region are Sultanganj, Jahanigira, ShahkundJamui, Nongarh, Patharghata, Kheri hills, Giridheswar (Sengupta and Chakraborty 2008: 272).

The other type of sites with Gupta period layers are religious in nature. Mainamati for instance, is an ancient settlement with Buddhist remains. The three Buddhist sites discovered on these hills are Salban Vihara, a large monastic establishment, Kotila Mura, a group of three stupas and Charpatra Mura, a Buddhist shrine (Pakistan Archaeology no. 1, 1964:44). An area nearby with exposed structures indicates the existence of an urban settlement of Buddhist period (PA no.1, 1964: 19).The site has substantial Gupta period artifacts. Beluti is again a settlement with exposed walls of bricks with a monastic complex. The bricks found there are dated to the Gupta period. This place also has an association with the Gupta period in local legend (Chakrabarti, Nag and Chakravarti 1978-79: 28). A site like Karnasuvarna in the Murshidabad district has not yielded a clear picture of an ancient city. It was important primarily as political centre and was not far from stupa remains of Raktamrittika monastery (Chakrabarti 1998: 72)

Excavation at Rangamati brought to light the remains of structures of three periods. The lowest one is a Buddhist establishment dated to the sixth-seventh century A.D. called Karna Survarna Vihara. The terracotta figurines found here are attributed to the Gupta period (Dikshit 1928-29:99-100). Paharpur is another site that the Buddha passed through on his reputed journey from Jetavana to Pundravardhana. The monastic establishment of the settlement of Somapura (modern Paharpur) in its present form is attributed to the Pala period (Dikshit 1938: 3). A central temple was

revealed in excavations. A copper plate dated to c.479 A.D. was found during excavations of the main temple (Chakrabarti, 1992: 118). Kanakandighi has a brick built temple known as Jatar Deul but belong to the same complex. Brick built structural activity can be seen within the temple complex. Kandaran in the Malda district is another site where a mound was excavated with structural remains of either a stupa or temple (Chakrabarti and Chattopadhya 1992: 137).

In terms of resource usage, the religious cum urban settlements were found to be rich in artifactual finds. Mainamati is a site with rich artefactual remains.Copper artifacts especially coins and dishes have been found here (Nag, Chakrabarti and Chakraborty 1978-9: 120-1). Kanakandighi has produced cast copper coins of Gupta rulers. Beluti has yielded iron slag pieces (Chakrabarti and Hasan 1982:120-121).

Regarding precious metals, Mainamati and Rangamati are the two sites to have furnished gold coins and rings. Moreover, Mainamati has produced coins of silver (Pakistan Archaeology, no. 6, 1969: 1). Beluti is again the only site amongst religious sites to have yielded quartz crystal and other semi precious objects that have not been specified further. Mainamati has yielded an image of sandstone and gray shale (Nag, Chakrabarti and Chakraborty 1978-9: 120-1). Bone implements have been found at Beluti.

Raw Materials Available Within the Sub- Region

The presence of copper, iron, gold, ivory and, shell have been noted on p.86 and 90

Crystalline Limestone & Marble

Crystalline limestone and marble occur at Jhalda in Purulia district. In Digardih-Chhota Bakad area there are two bands of crystalline limestone. White crystalline limestone occurs west of Hanspathar in Puruliya district (West 1950: 97).

CHOTANAGPUR PLATEAU

Semi-Precious Stones

The transition rocks of southern districts of the Chotanagpur Plateau often include banded jaspers. They occur in pebbles in streams of Singhbhum and native state further south (Ball 1881: 505). Quartz Crystals and masses of agate are found in abundance in the weathered out trap which occur in the Rajmahal Hills (Ball 1881:

505). Chalcedony and agate are abundant in traps of the Rajmahal Hills (Brown 1936: 71). Amethyst occurs in the Santhal Parganas and in Bihar (Brown 1936: 300).

Lead with Galena

Lead with significant portions of galena occurs in the Chotanagpur province in the following areas:

Hazaribagh district: Lead with galena occurs at Mahabagh, Baragunda, Barahmasia, Nyatand, Mukundganj, Parseya and Hisatu (Ball 1881: 291).

Manbhum district: Galena alongwith lead occurs at Dhadka as noted by Ball (1881:290).

Lohardaga district: Rolled fragments of galena have been found at Barikap, Sili and Chiraikund (Ball 1881: 294).

Sandstone

Sandstone occurs near Mangal Hat in the Rajmahal hills in the Santhal Parganas (Wadia 1966: 30).

Raw Materials Available Outside the Sub-Region

No raw material seems to have been procured from outside the region.

The lower Gangetic plains were a self-sufficient region in the period between the third and fifth centuries AD. No raw materials were procured from outside. The Chotanagpur plateau was resource region for silver and semi-precious stones such as quartz, crystal, agates and amethyst and sandstones.A few resources such as copper, iron, gold, ivory, shell and bone and limestone, marbles were available within the sub-region. We also notice a manufacturing industry especially in crystal and iron. The artifacts in this period were mostly recovered from the urban areas, although some gold coins were found from some of the small sites. The exchange pattern in this period was mostly within the region.

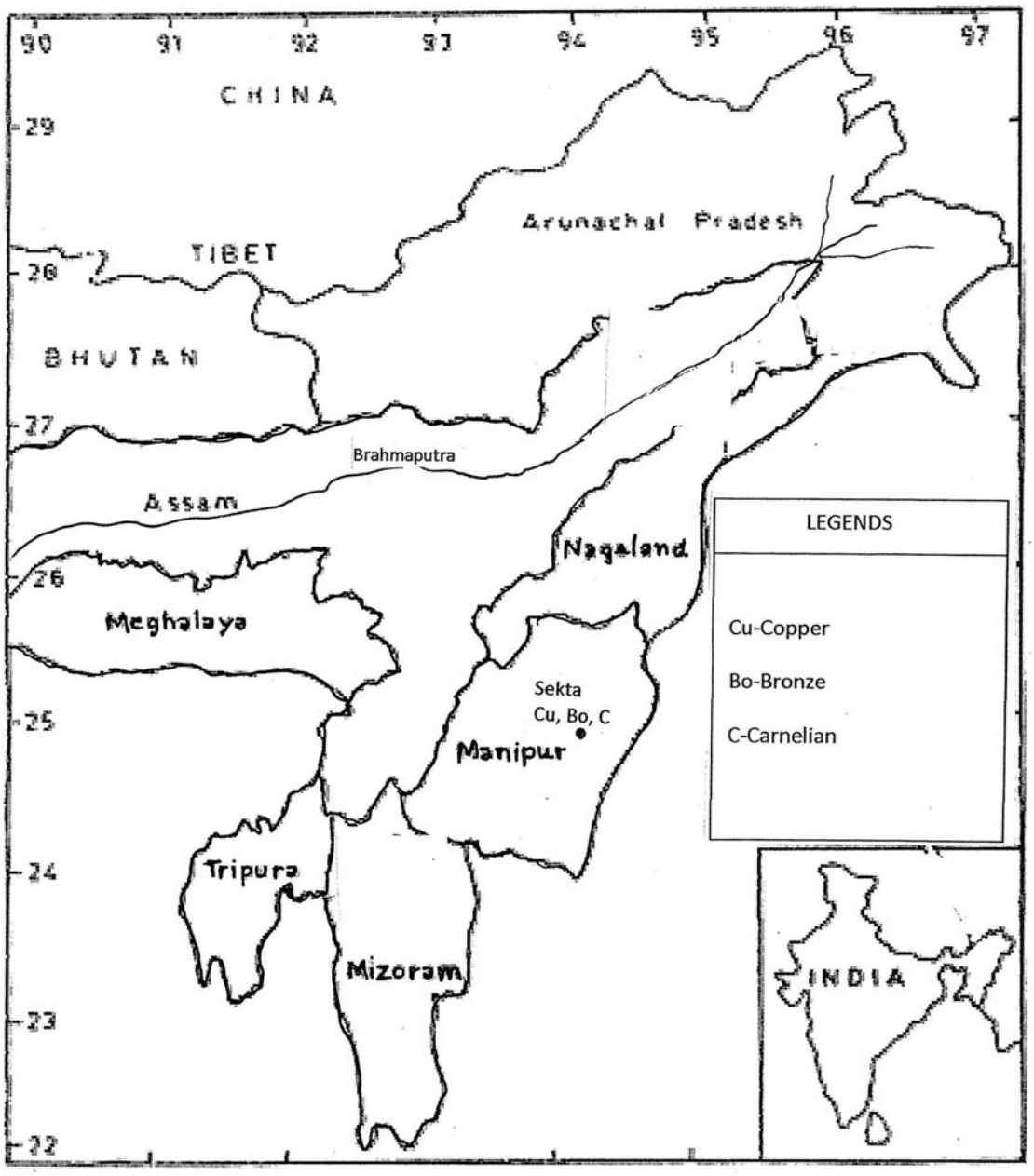
Northeast India

Northeast India covers a large territory and includes Sikkim, Nagaland, Manipur, Tripura, Mizo hills and Chachar hills of Assam (Singh 1971:493). The *Markandeya Purana* refers

Chart 9b
Northeast India—c. 300-500 A.D.

Raw Materials	*Sekta*
Copper/Bronze	Bronze bangles, Copper bracelet, bangle, coin nose ring
Iron	dagger, knife, scythe, spearhead, ball, harpoon head
Semi-Precious Stone	Carnelian beads

MAP-29



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE NORTHEAST INDIA

C. 300-500 A.D.

to Pragjyotisa and Lauhitya and describes the former as *Pragjyotisa Janapada* (Sharma 1978: 0.10). Other references to Kamarupa are found in the epics *Ramayana* and the *Mahabharata*. The *Ramayana* describes Pragjyotisa as the city built on an extensive seaside mountain (Lahiri 1991: 10). The Allahabad Pillar inscription of Samudragupta mentions Kamrupa as a frontier kingdom along with Samatata, Davaka, Nepa and Katripura whose kings accepted the overlordship of the Gupta monarch (Lahiri 1991: 13). The earliest royal family known from the epigraphs is the Bhauma-Varman family between the fourth to the seventh century A.D. claiming mythical descent (Sharma 1978: 0.29). The earliest known epigraph of this dynasty, the Umachal rock inscriptions belong to the fifth century. It is postulated by historians that the founder of this dynasty, Pushyavarman was a younger contemporary of Samudragupta. The names of his son Samudravarman and his wife was called Dattadevi indicate the possibility of imitation of the names of Samudragupta (Lahiri 1991: 67-68).

Sitewise Distribution Of Manufactured Objects

The 9b chart elaborates the different raw materials used in the region are bronze, copper, iron and carnelian.

Evidence of Manufacture of Finished Products At Different Sites

According to Sharma, at Sekta, beads of glass and paste were manufactured locally. Other beads of semi-precious stones were being imported into the valley (Sharma 1994: 71).

Character of Sites and Distribution of Manufactured Objects

Sekta is one of the urban sites of Manipur, and is known to have a sprawling habitation before the Christian era. According to the tradition preserved in the Burmese chronicle, Maharaja Vamsa, one Dhaja Raja Sakiyan prince settled in Manipur in 550 B.C. *Arthasastra* refers to the supply of raw materials from China through Manipur to India and the western world (Sharma 1994: 17). Nothing is known about the later periods though artifacts of the early centuries in the Christian era are found at Sekta in Period VI and VII. The last of these periods have been designated to c. 200 to 400 A.D. Some long necked, bulbous jars and spouted vessels, all in red ware known from north Indian sites have been found at Sekta. They date

from the Kushana to Gupta period and continue their presence upto the fourth-fifth centuries A.D. (Sharma 1994: 28). Bhaitbari (Vadagokugiri) in Meghalaya was one of the biggest ancient fortified town and a great religious centre with a number of temples and a Buddhist stupa. It flourished from the beginning of the Christian era and was at the peak of glory in the ninth to eleventh centuries A.D. (Sharma1993: 22). On the basis of the finds of pottery of second –third century B.C. the antiquity of the site has been pushed back further. This pottery has also been found in Sekta and various other sites in the Gangetic plains (Sharma 1993: 1).

Historically, Mahasthangarh in the Kartoya valley in modern Bangladesh must have played an important role in maintaining the Ganga plain's links with northern Assam extending up to Tezpur and beyond (Chakrabarti 2001: 65). Tezpur in Assam was an important regional centre of the Gupta period architecture and sculpture. Some statues and sculptures are found from Tezpur (Dah Parbatia) that belong to the Gupta period. Chakrabarti states that Tezpur was an important regional centre of the Gupta period architecture and sculpture and the antiquity of the site dates back to the second century B.C. (Chakrabarti 2001: 65; Lahiri 1991: 14). Paromita Das (2007: 47-52) has noted archaeological finds in pre-Ahom Assam between the fifth and the thirteenth centuries A.D. They are primarily of religious nature and consist of sculptures of stone, terracotta and bronze. Other architectural remains are pillars, bases, doorsills, ruins of temples. She notes the following:

"In the fourth century A.D. the Gupta art idiom also travelled to Kamrupa and survived here. The sculptural evidence also indicates the relation between the Gangetic valley and Kamrupa in the Gupta-post-Gupta period".

N. D. Choudhury has noted several architectural and structural finds in Darrang, Sonitpur, Naogang and Karbi Aolong in Assam dated between the fifth to seventh centuries and twelfth-thirteenth centuries A.D. (Chakrabarti 1998: 30).

At Unakoti in north Tripura, the cultural wealth prior to the sixth-seventh century A.D. is very hazy. Recent researches have however, brought to light mounds of stupa, temples, coins, sculptures on bronze, stone and terracotta and inscriptions of the early medieval period dating from the seventh-eighth century A.D. (Chauley 2007: 19-20).

Unakoti is famous for colossal rock cut panels of Hindu divinities. Also, at Pillak, large mounds of stupa and temples, sculptures on stone and bronze have been found. However, they are all from the seventh century onwards (Chauley 2007: 20). It has been observed by Chakrabarti that the historical picture through archaeological data becomes clearer from fifth century onwards in the Gupta-post Gupta period not only in the Brahmaputra Valley but also in other northeastern areas (Chakrabarti 1998: 31). This will be studied in the next chapter under post-Gupta period.

The different resources used at Sekta are very minimal. Bronze bangles are notable among them. Also copper bangles and bracelet shows an entirely different use of the resource. Iron artifacts are reasonable in number. They are in the form of dagger, knives, spearhead, harpoon head and scythe. A solitary carnelian bead has been found as well.

Raw Materials Available Within the Sub- Region

Copper

The availability has been noted on p. 89.

Iron

Banded hamatite-magnetite occurs along Chandradinga Hill in Kokrajhar sub-division of Goalpara district of Assam. Ranighat, north Lakhimpur, Malegarh, Malai, Lengupara, Kumni Hills in the Goalpara district also has of iron ore deposits (G.S.I. Misc. Pub No.30, Part IV, 1974: 53).

Raw Materials Available Outside the Sub-Region

GUJARAT

Carnelian

The presence of several semi-precious stones has been noted on p.116-17.

Epigraphic, Numismatic and Literary Linkages

Surely, carnelian must be available in the Chotanagpur plateau, although they may well be from Gujarat. The next section will reveal, such beads have customarily come from Gujarat. An interesting point has been made by Sharma in the context of the region's link with the far off land of Kutch (1993: 2).

"Every married Naga lady has to wear a few carnelian beads as a sign of good omen. The carnelian beads came to Nagaland from far off Kutch, where carnelian bead making was a flourishing industry since Harappan times. Enquiries have revealed that traders from far off Kutch had been coming to this remote area of Nagaland for trading carnelian beads since time immemorial".

In the period between the third and the fifth century A.D. a large part of India was bound by the ambitious expedition of the Gupta monarch Samudragupta including the republican states in the northwest to the frontier kingdoms in the Brahmaputra valley extending further down the southern territories of Dakshinpatha. The geographical information about the expedition is vividly described in the Allahabad Pillar inscription (Bhandarkar 1981: 208). The Gupta ruler is known to have stretched his empire as far as the Malwa region in the west. Airikina or eastern Malwa is named as one of the *visayas* of the imperial sub-provinces in later inscriptions. Subsequently, the Eran stone inscription of Samudragupta substantiates the extent of the Gupta empire in the region (Raychaudhuri 1996: 474). Chandragupta II is known to have defeated the Saka chief and included Saurashtra to his empire. The backdrop of this conflict has been dramatised by Vishakhadatta in his Sanskrit play *Devichandraguptam* (Agarwal 1989:36).Coins and inscriptions of Chandragupta II (c.375-413-15 A.D.) and of other rulers, such as, the Junagarh rock inscription of Skandagupta (c.414 – 455 A.D.) in Gujarat indicate the further extension of the Gupta empire to the west (Raychaudhuri 1996: 452). In this light, the procurement of carnelian from Gujarat by the northeastern region does not seem impossible.

The Northeast is archaeologically clouded by lack of proper documentation. Sekta in Manipur and Dah Parbatiya in Assam, are a few sites that have yielded pottery and architectural and sculptural remains from this period. We do not see any manufacturing activity here. The only notable find is carnelian which might indicate a long distance exchange pattern. The region was probably obtaining resources such as copper and iron from within. Carnelian in all probability was obtained from the Gujarat in the west as observed by Sharma (1992:2).

Orissa

Kalinga in the post Kushana period, was split into a number of kingdoms.The southern expedition of Samudragupta resulted in the defeat and subsequent re-

Chart 10b
Orissa—c. 300---500 A.D.

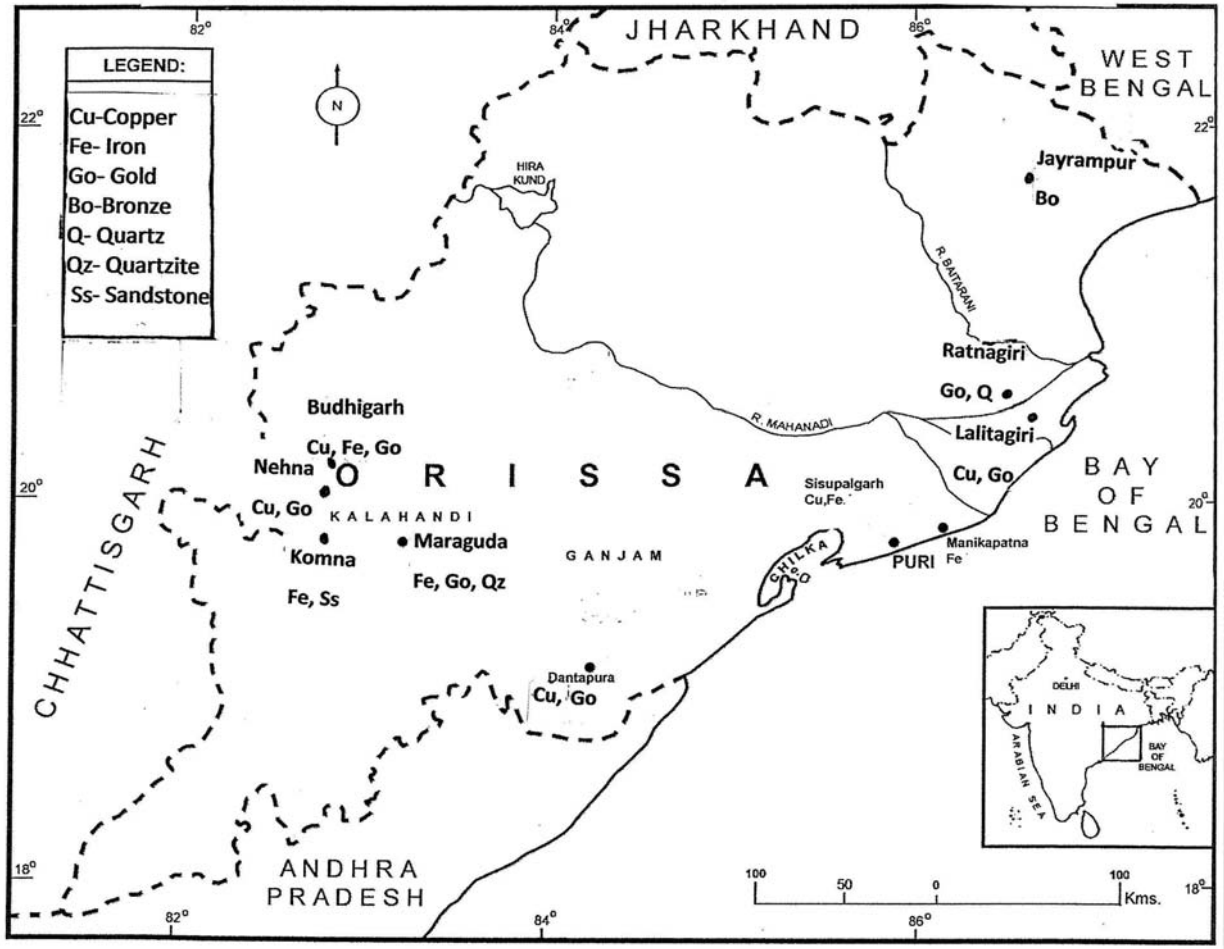
Raw Materials	*Nehena*	*Budhigarh*	*Maraguda*	*Lalitgiri*	*Sisupalgarh*	*Dantapura*	*Manikapatana*	*Komna*
Copper/Bronze	coins	bangles		coins	coins	coins		
Iron		objects, slag	beads, clamps implements		objects		harpoon, spearheads, fishhooks, beads	slag
Gold	coins	jewellery, coins	coin	coins		coins		
Semi-Precious stone	unspecified beads							beads
Ordinary stone			Shiva linga Quartzite					Sandstone plaques

Chart 10b (continued)

Raw Materials	*Ratnagiri*	*Jayarampur*
Copper/Bronze		Bronze image
Gold	beads	
Semi-precious stone	Quartz beads	

MAP30

SITE WISE DISTRIBUTION OF RAW MATERIALS IN ORISSA c. 300-500 A.D.



instatement of twelve rulers of the Deccan (Majumdar 1977: 232). According to the Allahabad Pillar inscription, a few of these independent chiefs included Mahendra of Kosala, Vyagrahraja of Mahakantara, Mahendragiri of Pishthapura, Damana of Erandapalle and Kuvera of Devatastra. These were the independent chiefs of western and southern Orissa (Mohapatra 2002: 6-7). The *Raghuvamsa* of Kalidasa describes the town of Kalinganagara in the fifth century A.D. as one by the sea coast in the Andhra country and the lord of Kalinga as the 'lord of sea' as a well as of Mahendragiri of the eastern Ghats (Majumdar 1984: 38). The well known sites of the region are Sisupalgarh and Jaugada. The region is also famous for the Ashokan edict at Dhauli. The other sites with early historic assemblage are Manikapatna, Lalitagiri and Dantapura. Coins of Gupta rulers have been discovered from Bhanpur (Mayurbhanj), Kanja, Lalitagiri (Cuttack) (*Gazt.Of India*, Orissa 1990: 141).

Sitewise Distribution Of Manufactured Objects

Chart 10b shows the different raw materials used in Orissa. They are copper, iron, and gold.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Slag was found in Budhigarh along with other iron objects (Basa and Mohanty 2000: 423).

Bead making: A mould for the preparation of beads and ornaments was found from Period II (first to the fourth century A.D.) at Asurgarh in the Kalahandi district along with a ground stone tool (I.A.R. 1972-3: 27).

Character of Sites and Distribution of Manufactured Objects

The major urban centers in this region are Sisupalgarh, Dantapura, Manikapatna and Asurgarh (Lal 1949; Basa and Mohanty 2000). Sisupalgarh is often identified with Tosali of Ashokan edicts; however there is no evidence to substantiate it. The site has one integral culture dating from the third century BC to the fourth century A.D. It was a fortified settlement with eight gateways and a guard room. The gaps between the houses were noted in the habitational deposits (Lal 1949; 64, 77). Puri-Kushanaa coins were discovered at Sisupalgarh (Prasad 1984:65). Dantapura, identified with Paloura in the Ganjam district, could be the site mentioned by Ptolemy, generally

taken to be the Dravidian form of Dantapura (Chakrabarti 1997: 240; 2005: 55). According to the Jatakas it was the capital city of Kalinganagara. It is mentioned by the *Mahabharata* and Buddhist text *Dighanikaya* and Jain sources (Pradhan, Mohanty and Mishra 1995-96: 123). Two brick built stupas and a rampart was noted at the site (Chakrabarti 2005: 55). Puri-Kushanaa coins and Gupta gold coins of fourth-fifth century A.D. were found at Dantapura (Basa and Mohanty 2000: 656). Manikapatnam was an ancient port in the Bramhagiri tehsil. Rouletted ware was discovered here and the exploration shows that the site was in continuous occupation from the first century A.D. (Pradhan, Mohanty and Mishra 1995-96: 121). The site revealed a periphery of habitation and has numerous potsherds. Thirteen terracotta ringwells were exposed in the excavations (Basa and Mohanty 2000: 480). At Asurgarh, a circular brick structure, possibly of a temple of the fifth-sixth century A.D.was unearthed. A brick fortification with gates on four sides surrounded by a moat was also noted. Puri-Kusana copper coins and beads of semi-precious stones have also been found (Basa and Mohanty 2000: 422). Evidence of bead making has been found in this period (I.A.R. 1972-3: 27). The copper artifacts found here are mostly coins and beads.

The resource usage at the urban sites is moderate. The well known urban centre of Sisupalgarh has used only copper and iron as coins and unspecified objects. At Dantapura, the finds are primarily gold coins. Iron artifacts such as harpoons, beads, spearheads and fish hooks are found from Manikapatna. Other than these, unspecified beads of semi-precious stones were also found here. The number of artifacts and their variety are very poor at the urban sites of Orissa.

The second tier of settlements of small sites is Nehna, Komna, Budhigarh and Maraguda (ed. Basa and Mohanty 2000). Nehna revealed traces of a megalithic culture. The site came to be known as Navanaka during the historical period. Gold coins of Gupta and Sarabhapuriya dynasties were found here (Basa and Mohanty 2000: 421). Komna yielded iron slags and an image of the Lajja Gauri and soapstone plaques depicting the Buddha (ed. Basa and Mohanty 2000:424). Unspecified objects and slag of iron were found from Budhigarh. Traces of brick walls were noticed during excavations. Gold coins of Sarabhapuriya rulers and jewellery were found at Nehna, and Maraguda (ed. Basa and Mohanty 2000: 421-4). Maraguda in the Kalahandi district has exposed a stupa mound

(Donaldson 2001: 29). Here, a yoni made of quartzite, a huge Siva linga along with a temple complex and fragmentary stone inscription of fourth century A.D. and residential buildings were unearthed (Basa and Mohanty 2000: 424).

Some of the well known religious sites of this region are, Lalitagiri in Jajpur district, Radhanagar in coastal Orissa Ratnagiri in Cuttack district Udayagiri and Langudi (Basa and Mohanty 2000; Mitra 1981; Donaldson 2001). Lalitagiri was one of the major centers of Buddhism. The historical period is well represented in this site. Mauryan, Kushana and Gupta inscriptions were found at Lalitagiri (Basa and Mohanty 2000: 446, 450). The base of a railing pillar with half lotus medallions, as also copper and gold coins are reported from this site. At Lalitagiri a number of images of the Buddha of early Gupta period have been found. Gupta inscriptions on the lower part of votive stupas and shell inscriptions were discovered at Lalitagiri with Gupta Brahmi characters of fourth-fifth century A.D. Occurence of moulded pottery containing letters of Gupta-Brahmi characters were also found (Basa and Mohanty 2000: 450,459). Radhanagar, in coastal Orissa, was a fortified settlement. The locality was associated with a large number of pottery, brick structures, terracotta ring well and other habitational debris (Basa and Mohanty 2000: 507).Ruins of a large number of Buddhist remains such as, sculptures, votive stupas, and a rock-cut elephant were noted here. Imitations of Kushana coins have been reported from this site and other such sites in the coastal region. These coins were in circulation in the fourth-fifth century A.D. after the fall of the Kushana empire (Mishra 2000: 523). Ratnagiri in Cuttack district was an impressive stupa on the hillock surrounded by a number of small stupas dating back to the late Gupta period. The *Mahavihara* was identified on the basis of several sealings bearing the name Ratnagiri Mahvihara. The Stupa was constructed on a plinth of an earlier brick edifice dating back to the Gupta period. Figure of the Buddha, relics of bones, gold, stone and quartz beads were mostly recovered including terracotta plaques from the site (Pal 2001: 42-3). The foundation of some of the stupas in Monastery 2 went back to the Gupta period as is evident from the discovery of several stone slabs inscribed in the characters of 5^{th}-6^{th} c. AD (Mitra 1981:25). The entrance complex of Monastery 1 has the carved door frame has several sculptural figures and decorative patterns (Mitra 1980:229).

Langudi revealed a strong Buddhist rock-cut tradition in Orissa. The site has thirty four rock-cut stupas (Basa and Mohanty 2000:527).Udayagiri and Khandagiri in the Cuttack district provide the earliest evidence of systematically organized rock-cut monuments of the region. The caves were dedicated to the Jain monks by Kharavela of the Mahameghvahan dynasty of the Hathigumpha inscription of the post-Mauryan period.

Other Buddhist sites in Orissa during this period are Jayarampur in Balasore district. This Mahayana centre was identified on the basis of a copper plate inscription of one Gopachandra of early sixth century AD (Mitra 1980: 223).Other major Buddhist sites in the region include Pushpagiri, Kundeshwar, Vajragiri in the Cuttack district, Boudh town in Phulbani district, Khiching in Mayurbhanj district, Khadipada, Solampur and Ayodhya in Balasore district. Some of the finest sculptures are from Chauduar in Cuttack district (Mitra 1980: 224).

Raw Materials Available Within The Sub-Region

Gold

Gold is available in the following districts in the region.

Keonjhar district: Gold washing was practiced in the past near a small tributary of Hammantia nala (Ziauddin and Narainswami 1974: 142).

Mayurbhanj district: Five square kilometer of alluvium was found to be highly auriferous at the Sapgora and Borai rivers near Kudersai (Ziauddin and Narainswami 1974: 144).

Sambalpur district: Gold is reported from sand and gravel beds of Mahanadi River (Ziauddin and Narainswami 1974: 144).

Iron

The earliest reference to manufacture of iron is reported by Captain Hamilton who states that iron was plentiful at Balasore as reported by Ball (1881: 362). Most abundant source of iron ore is at Kodaloi in the Sambalpur district (Ball 1881: 362, 382). It is also known to occur in Gorumahisani, Badam and Sulaipat hills of Mayurbhanj district (Behuria 1990: 70).

Copper

Copper ores are available in Kesarpur, Dudhiasal and Madansahi copper deposits in the Mayurbhanj and Adash copper ore deposits in the Sambalpur district (Wadia 1966: 128).

Orissa during this period had more Buddhist sites than early historic settlements. However, manufacturing activity is noted at small sites such as Budhigarh and Asurgarh where, evidence of iron slags and bead making are reported. Resources used in this region are moderate and are copper, iron and gold. All these resources were obtained from within the sub-region. The region was possibly self sufficient with regard to resource procurement in this period.

Central India

Central India is a vast region scattered with several historical sites. Some of them are Besnagar, Tumain, Kayatha and Ujjain. Besnagar was the western capital of the Sunga dynasty as well as rulers of east Malwa. It was also an important point in the north-Deccan–west India route (Chakrabarti 1997: 221-2). Ujjaini was an important ancient site and was part of the sixteen Mahajanapadas at the time of the Buddha and an important base of the Gupta dynasty. At the beginning of the fourth century A.D. there were several independent petty states in the region of Malwa. The territory around Pawaya was ruled by the Nagas and western Malwa was ruled by the Sakas (Jain 1972: 229). In the Mahakoshalaz region, comprising the present state of Chattisgarh, a number of petty chiefs were ruling in the beginning of the fourth century A.D. Samudragupta on his campaign to the south is known to have conquered petty chiefs such as the Parivrajakas, Uchchakalpas and made them his feudatories (Lal 1985: iii).

Sitewise Distribution Of Manufactured Objects

Chart 11b shows the different raw materials used in the central India. They are copper, brass, bronze, iron, gold, silver, quartz, carnelian, agate, basalt, sandstone, steatite, sandstone, shell, and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Casting of Ornaments: The most important yield at Sabatpur in Sehore district is that of the terracotta dies excavated from different areas of this stratum assigned to the third to the sixth century AD. More than twentyfive

Chart 11 b
Central India—c. 300—500 A.D.

Raw Materials	*Kayatha*	*Bhandara*	*Pitiaband*	*Besnagar*	*Indore*	*Tripuri*	*Tumain*	*Ujjain*	*Eran*
Copper/Bronze	spouted cup, bowls, bangle,anti-mony rods		coins	wire rods, antimony rods,Finger rings,coins Brass fingering, saucer	coin	objects	coins	bronze coin	
Iron	spearhead heads,arrow head, hooks knife-blade, ladle,rod			bead,arrowheads, sickles,rings,knife, axe,chisel,bolt,nails		objects			objects
Gold		coins						coins	
Silver		coin							
Semi-Precious stone	Quartz,Carne-lian drop pendant			Agate beads					
Ordinary Stone	Basalt quern, Sand-stone figure								
Steatite/Soap stone	Soapstone lid, spool			Soapstone pencils, Steatite lid, saucer					
Shell/Conch	bead, bangles			bangles		beads			bangle fragments
Ivory	bangle fragment, carved bottle			handle, pipe					

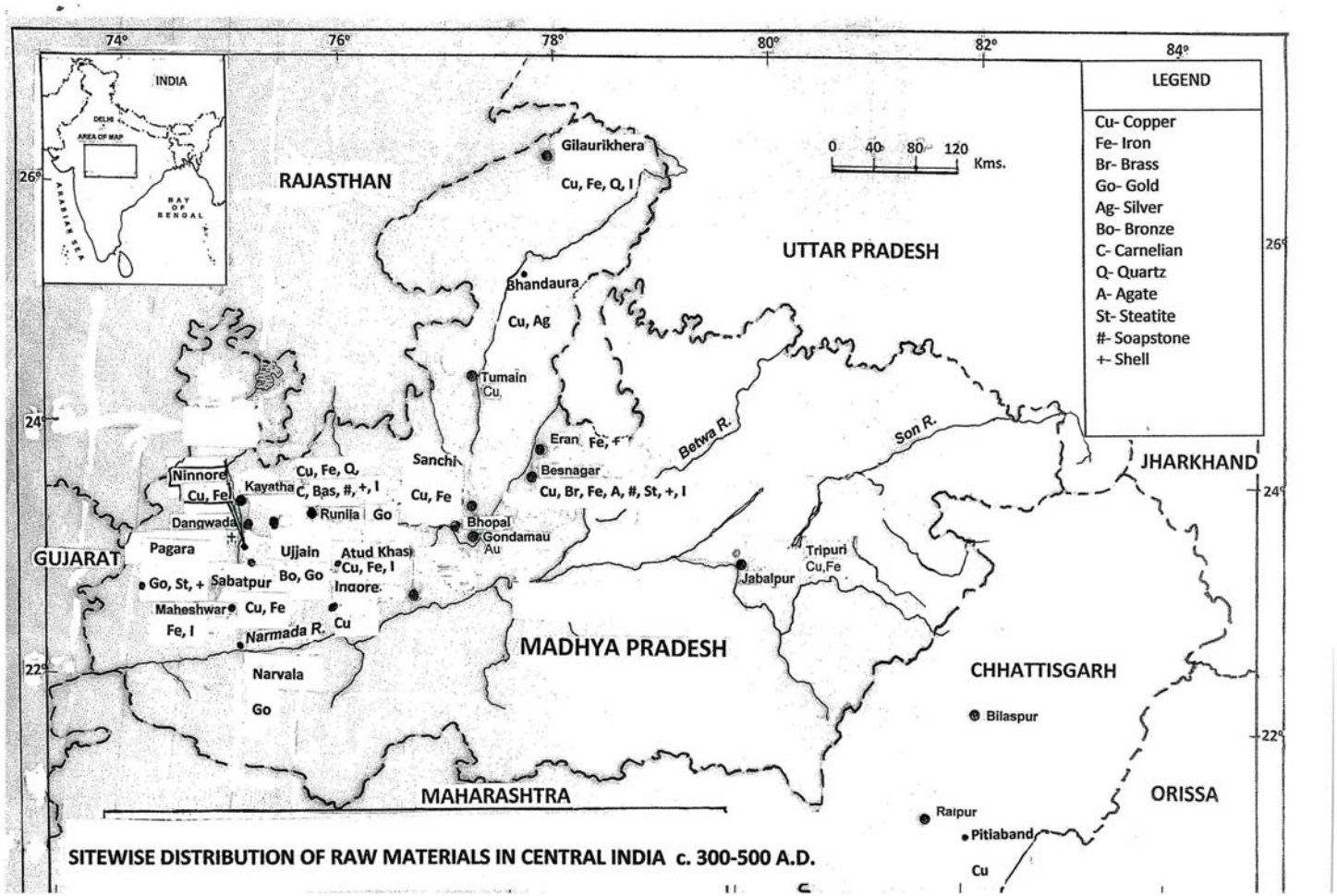
Chart 11 b (continued)

Raw Materials	*Annupu-Beldi*	*Sanchi*	*Naravala*	*Dangwada*	*Malhar*	*Pagara*	*Gilaurikhera*	*Atud Khas*
Copper/Bronze		coins					spearhead	implements, antimony rods, hairpins, rings
Iron		helmet, javelin, implements					spearhead, nail,clamp, vessel	implements, nails, rings
Gold	coin		coin			coins, piece		
Semi-Precious stone		unspecified beads						Quartz beads
Ordinary Stone					beads		muller	
Steatite/Soapstone						carved fragments		
Shell				bangles		beads		bangles
Ivory							fragment of bangle	

Chart 11 b (continued)

Raw Materials	*Maheshwar-Navdatoli*	*Runija*	*Ninnore*	*Sabatpur*
Copper/bronze			antimony rod, rings	antimony rod, ring, bell, finger ornament
Iron	arrowheads, spearheads, nails, chisels, sickles, knives		arrowheads, axes, nail pieces, household equipment	arrowheads, axes, nails pieces, household equipment
Gold			coins	
Shell	bangles			

MAP-31


74°
76°
78°
80°
82°
84°
26°
24°
22°
INDIA
DELHI
AREA OF MAP
ARABIAN SEA
BAY OF BENGAL
RAJASTHAN
UTTAR PRADESH
MADHYA PRADESH
CHHATTISGARH
JHARKHAND
ORISSA
GUJARAT
MAHARASHTRA
0 40 80 120 Kms.
LEGEND
Cu- Copper
Fe- Iron
Br- Brass
Go- Gold
Ag- Silver
Bo- Bronze
C- Carnelian
Q- Quartz
A- Agate
St- Steatite
#- Soapstone
+- Shell
Gilaurikhera
Cu, Fe, Q, I
Bhandaura
Cu, Ag
Tumain
Cu
Eran
Fe, +
Sanchi
Cu, Fe
Besnagar
Cu, Br, Fe, A, #, St, +, I
Betwa R.
Son R.
Bhopal
Gondamau
Au
Ninnore
Cu, Fe
Kayatha
Cu, Fe, Q, C, Bas, #, +, I
Dangwada
Runija
Go
Pagara
Ujjain
Atud Khas
Cu, Fe, I
Go, St, +
Sabatpur
Bo, Go
Indore
Maheshwar
Cu, Fe
Fe, I
Narmada R.
Cu
Narvala
Go
Jabalpur
Tripuri
Cu,Fe
Bilaspur
Raipur
Pitiaband
Cu
SITEWISE DISTRIBUTION OF RAW MATERIALS IN CENTRAL INDIA c. 300-500 A.D.

negatively carved dies with various designs were found. They were used in casting ornaments like, necklace, bracelet, kundal and pendant. It appears that the ornament makers' were residing in the locality (Sharma and Mishra 2003: 205-6).

Character of Sites and Distribution of Manufactured Objects

The urban sites in the region are Vidisha (Besnagar), Tumain, Kayatha, Ujjain and Eran. Kayatha can be identified with the ancient Kapitthaka which was probably the birth place of the celebrated astronomer Varahamihira, of the fifth-sixth century A.D (Ansari and Dhavalikar 1975: 1). Remains of baked brick houses and the find of the figure of the Buddha in typical Gupta style are notable from here (Sharma and Mishra 2003; 117). Tumain is identified with ancient Tumbavana. During Kumaragupta's reign, it was the seat of the governor of northeastern Malwa region (I.A.R. 1971-2: 27-8). This period yielded red polished ware and stamped pottery, as also copper, iron and terracotta objects (Sharma and Mishra 2003: 217). Besnagar was an important center during the Kshatrapa-Gupta period. The Naga-Kushana period has yielded antiquities relating to the Gupta period. It is marked by typical conical bowls, sprinklers and terracotta human and animal figurines and a few Naga coins (Sharma and Mishra 2003; 91, 93). Similarly Ujjain was also strategic to trade between the north-west and the Deccan. Eran was an important site yielding red polished ware, coins of the Gupta ruler Ramagupta, terracotta beads, shell bangles, circular clay sealing with two lines of inscription in early Gupta characters reading '*Airikene Visaya-Adhikara'*. Also, a clay sealing bearing an inscription in script of the fourth century A.D. was found (Sharma and Mishra 2003: 105). Maheshwar and Navdatoli in the west Nimar district are twin cities on either side of the river Narmada. Period IV here is assigned a date from c.100-500 A.D. This stratum has yielded red ware with sprinkler as the typical shape. A variety of iron objects have been recovered. They are arrowheads, spearheads, nails, sickles, knives, bone points, shell bangles, beads of semi-precious stones and shell (Sharma and Mishra 2003: 129-30). Pawaya, the ancient city of Padmavati has yielded a few artistic carvings and sculptures of the Gupta period such as, the image of Vishnu, two-faced sun capital, a dance scene and so on. Excavations revealed a terraced brick structure consisting of three platforms. They indicate the type of structures that existed in the ancient city (Sharma and Mishra 2003: 199-200).

The resource-use of these urban sites is moderate except in a few specific items. The use of copper and iron is profuse at Kayatha and Besnagar. The artifacts comprise wires, rods, antimony rods, bowls, spouted cups, coins, finger rings and saucers. Iron artifacts are in the form of spearheads, arrowheads, spikes, blades, knives, clamps, chisels, sickle and so on. Gold coins have only been found at Ujjain. Except a bronze coin, Ujjain has not yielded any artifact of copper or iron. Amongst the semi-precious stones quartz, carnelian and agate beads are found from Kayatha only. Sandstone figures are also confined to Kayatha. Steatite and soapstone artifacts such as beads, bangles, pencils and saucers are also limited to Kayatha and Besnagar. Shell beads and bangles, ivory and bone points, awls and pins are found at these two urban sites. Ujjain has yielded limited quantity of artifacts.

The second tier of settlements in central India is few. They are Bhandara (Chanda district), Pitiaband (Raipur district), Tripuri(Jabalpur district), Indore, Dangwada (Ujjain district), Pagara (Dhar district), Ninnore (Sehore district), Malhar (Bilaspur district) and, Gilaurikhera (Morena district) (I.A.R. 1954-55:63; 1959-60: 65; 1967-8: 23; 1967-8:23-4; 1979-80:55; 1974-5:22; 1975-76:23; 1981-2:34). Tripuri was a fortified site and was occupied from c. 500 B.C. to 400 A.D. (I.A.R. 1967-8: 23). Gilaurikhera yielded pottery typical of the Gupta period and terracotta tablets, beads, dabber, stopper, iron objects, copper spearhead, ivory bangle piece and quartz beads (Sharma and Mishra 2003: 109). Malhar yielded red polished ware of this period, some Buddhist pots bearing the name ‘Dharma-karaka’. Kaolin pottery was also found. A rim piece of a big jar contained a Gupta Brahmi inscription Mahaswami. A rare clay sealing was recovered which bears the inscription ‘Maharaja Mahendrasya’ in Gupta Brahmi characters. Massive construction work of this period is visible in form of several Saiva-Sakta cults at Malhar. Some trenches also yielded a Buddhist chaitya and temple (Sharma and Mishra 2003: 135). At Mandsaur, a trench laid bare the remains of a Gupta period temple (Sharma and Mishra 2003: 136). Ninnore revealed a habitational deposit with the plan of a house along with ring wells. Red ware pottery, a plaque of Mahisasuramardini and other objects of stone, terracotta, iron and copper were found. They are datable between c.300-600 A.D. (Sharma and Mishra 2003: 195). Pagara yielded gold coins of Gupta rulers, shell bangles, beads, terracotta figurines and carved soapstone fragments (Sharma and Mishra 2003: 199).

Piparia in Satna district, brought to light the remains of a Gupta temple datable to the fifth century A.D. (Sharma and Mishra 2003: 200). Two sculptures along with the remains of a brick temple near Dithwara in Jabalpur district were discovered. It is locally called Jogia Baba. The discovery is important to show the main artery connecting Pataliputra to Ujjain through river Son passed through Kausambi, Nachna (Eran), and Vidisa wherein one notices through the whole route, temples of the Gupta period at regular intervals (Trivedi 1979-80: 150-1).

The use of raw materials in these sites is as follows. Coins of copper are found at most of these sites and at Gilaurikhera we come across a copper spearhead. The iron artifacts namely clamps, chisels, vessel and spearhead are also obtained only at Gilaurikhera. What are noteworthy are the gold coins that were revealed at some of these small sites. These are Annupu-Beldi (Shahdol District), Narvala West Nimar district), Bhandara (Chanda district) and Pagara (Dhar district). Bhandara is the only site that produced gold and silver coins. Quartz beads were found at Gilaurikhera. The small sites in the Gupta period yielded gold and silver coins that were hardly found at the important urban sites.

The number of explored sites in the region with antiquities of this period is substantial. Atud Khas in East Nimar district has a long chronology. It has antiquities from the chalocolothic period to historical period. We find terracotta objects of Sunga as well as Gupta Period. In the Kshatrapa-Gupta period, we find decorated pottery, structures and terracotta figurines (Sharma and Mishra 2003: 82, 84). Avra in Mandasaur district, revealed brick structures of the third to the fifth century A.D. The finds consist of pottery, red polished ware, Mother Goddess figurines and terracotta toys (Sharma and Mishra 2003: 88). Dangwada on the right bank of Chambal River was an ancient city. The Gupta period layers have yielded three sealings containing inscriptions of the Gupta Brahmi characters, large number of terracotta figurines, bangles of shell and structural remains such as a floor packed with pebbles and small stones (Sharma and Mishra 2003: 101). Khedinema in Harda district had a few decorated potsherds of this period (Sharma and Mishra 2003: 122). Runija in the Ujjain district yielded nine gold coins of the Gupta dynasty including coins of rulers such as, Chandrgupta II and Samudragupta. This site is extremely rich in Gupta-Aulikara sculptures (Sharma and Mishra 2003: 155). Sabatpur in

Sehore district exposed a habitational deposit. An enclave of ornament casters was discovered in the excavation here. Beads of semi-precious stones, copper and iron objects were found in the excavations (Sharma and Mishra 2003: 205-6).

Sanchi is an ancient religious site of this region with Buddhist remains of a stupa. Although the rapid expansion of Gupta power under Samudragupta had brought the Western Kshatrapas into contact with it as early as the middle of the fourth century, it was not until the close of that century that the actual annexation of Eastern and Western Malwa was achieved by Chandragupta II. An echo of this emperor's conquest occurs in an inscription carved on the balustrade of the Great Stupa at Sanchi, dated 412-13 A.D. (Marshall 1955: 17). In front of Temple 31, stupa number 28 and 29 that deserve mention among other ruins. Each of these small stupas is provided with high square base, cornice and footings that are characteristic of early Gupta age. On the main terrace, besides the stupas two other classes of monuments are found, namely pillars and temples (Marshall 1955: 101). It is in the Gupta age the massive pillar in the North gateway numbered 35 was erected. In fact it is often compared with the pillar of Asoka near the Southern Gateway. Each feature of this pillar whether structural, stylistic and technical is typical of Gupta workmanship (Marshall 1955: 98-99, 108-9).

Raw Materials Available Within The Sub-Region

The presence of semi-precious stones (agate, carnelian, chalcedony, jasper, and quartz), sandstone and steatite has been noted. (p.104)

Gold

The presence of gold in the region has been discussed on pg. 103.

Copper

The presence of copper has been noted on p.104.

Lead and Silver

The presence has been noted on pg. 104.

Iron

Hematite ore is worked in the mines of Dubwara, Agaria and Janti in Balaghat and Jabalpur district. Native furnaces are found at Rewa district. Bijawar states in central

India have important deposits in Gwalior contain rich iron ore. Shafts about thirty-forty deep work the Mangor mines (Ball 1881:393).

Steatite

The occurrence of beds of talcose schists and steatite north of Narmada adjacent to the marble rocks are recorded by Medlicott in 1860 in Memoirs of G.S.I. Vol 2, 1860. Its presence has been recorded at Lalpur, Dundara, Gawri, Bhoraghat, Rithori, Khamaria, Manhera and Uchera (Imperial Gazt. of India: Central Provinces 1908: 23)

Ivory

The forest cover on the beds of the Narmada, Tapti and its tributaries were the possible source of elephants and thus of ivory.

Raw Materials Available Outside The Sub-Region

GUJARAT

Shell, Coral

The coastline of Gujarat was the nearest possible source for shells and corals.

Epigraphic, Numismatic and Literary Linkages

In the period between the third to the sixth century A.D, the conquest of Samudragupta went a long way in integrating the country under the supreme authority of the Gupta dynasty. The annexation of eastern and western Malwa was achieved by Chandragupta II. In c.380 A.D. Gujarat was also included into the Gupta empire after Chandragupta II defeated the Western Kshatrapas ruling in that region (Majumdar 1977: 126). The annexation of Saurashtra is attested by the silver coins of Chandragupta II imitated from those of the Saka Satraps (Raychaudhuri 1996: 452). Among the references to the administrative divisions of the Empire, the Gupta inscriptions mention Saurashtra (Kathiawad), Dabhala (Jubalpur), among *Desasas,* and *Pradesas or Vishayas* include Lata-*visaya* in Gujarat, Tripuri in Jubalpur and Airikina in East Malwa (Raychaudhuri 1996: 494-5).

Central India is a resource rich area. Its repertoire of artifactual finds shows that most of the resources used were available within the sub-region. These were ores of copper, iron, gold, silver, different varieties of semi-precious stones, sandstone and steatite. Its strategic

location made it possible to access territories in all directions. The only products that were obtained from outside were shell and corals from the Gujarat coastline.

The fact that we do not find any major industry despite the easy access to resources leaves some queries unanswered. Perhaps the industries were too diverse and widespread over the vast region for a comprehensive view on manufacturing. It could also be that none of the manufacturing units were located near urban areas. At Sabatpur in Sehore district was found a habitational deposit, where, an enclave of ornament casters was discovered in the excavation. It is the sole evidence of manufacturing activity in the region. The condition of the urban sites during the Gupta period as understood from their artifactual finds which showed a very scattered kind of resource usage. Some of the resources remained confined to particular sites and a variety in usage of different raw materials was found lacking. This is visible in terms of gold and silver coins mostly confined to smaller sites such as Bhandara. The exchange pattern was nominal as the only region with which the Central India was procuring shells from the Gujarat coastline. However literature especially the writings of Kalidasa give a different picture. Kalidasa (in the reign of Chandragupta II) reveals an intimate knowledge of the Central India. Ujjaini's splendour and opulence are greatly reflected in his writings. The donors at Sanchi belong to different professions. This included the political class, administrative heads and monks. Given the level of monastic activity at Sanchi it surely indicates the prosperity of this area (Singh, 1996:29).

Rajasthan

Rajasthan in the early Christian centuries (first century B.C. to fourth century A.D.) was ruled by the Saka Kshatrapas who defeated the different republican powers of Malavas, Yaudheyas inhabiting in Rajasthan to establish their hold over the region. Coin hoards of eleven Saka-MahaKshatrapas from Rudrasimha I (c.181-192 AD) to Yasodaman II (c. 317-22 A.D.) have helped throw light on the history of Rajasthan during this period (Hooja 2006: 105). After the decline of the Saka and Kushana powers, several local groups such as the Yaudheyas, Arjunayanas, and Abhiras reasserted their independence until the rise of Samudragupta.

Chart 12b
Rajasthan—c.300---500 A.D.

Raw Materials	*Jaipur*	*Bayana*	*Bundewali Doongri*	*Ajmer*	*Sambhar*
Copper/Bronze					needle, fingering of wire
Iron					hanging lamp, nails, daggers
Silver	coins			coins	
Gold		coin hoard	coins		
Semi-Precious stone					Rock-Crystal pendant
Ordinary Stone					Sandstone grinding stone
Conch					disc
Ivory					comb

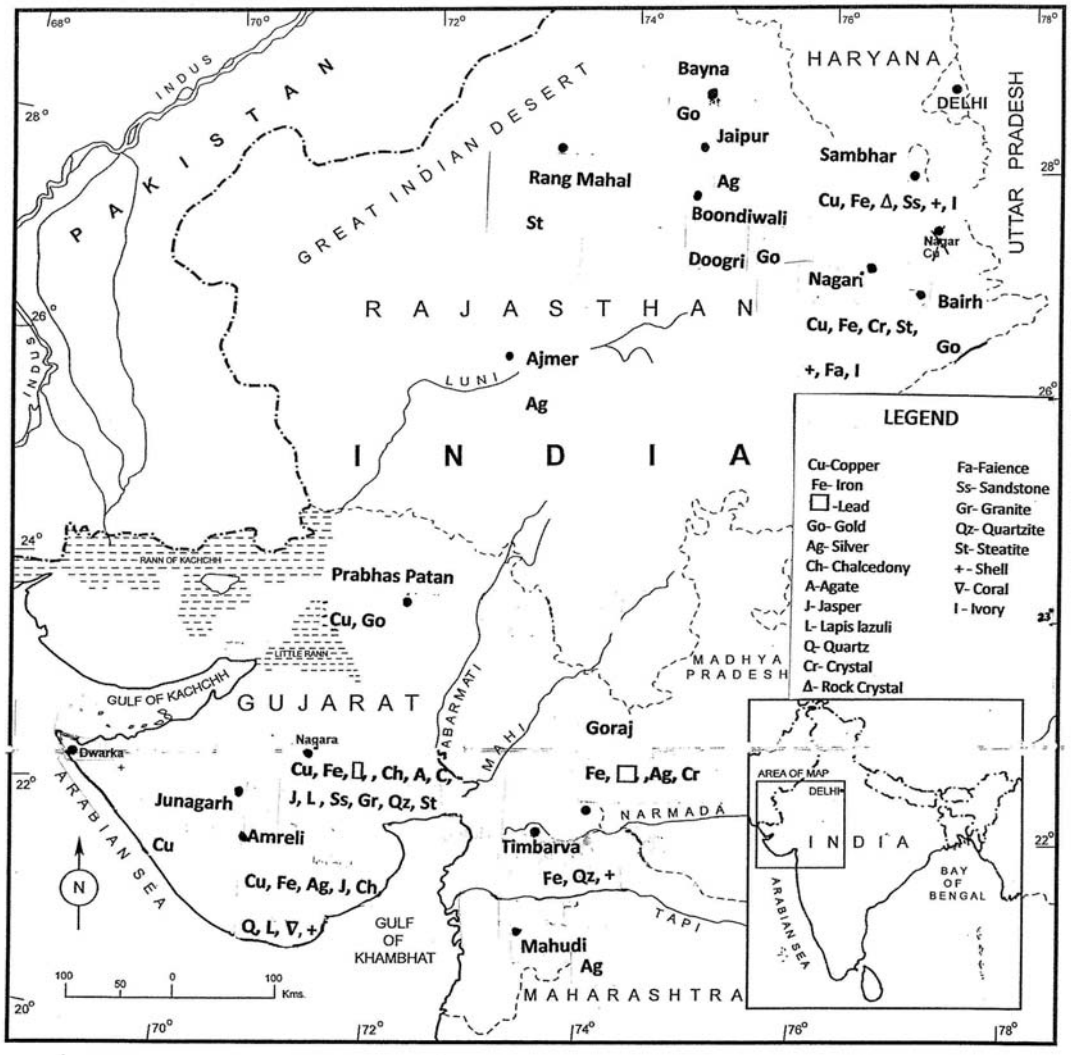
Chart 12b (continued)

	Raw Materials	*Bairh*	*Rang Mahal*	*Nagari*
	Copper/Bronze			antimony rods, finger ring,spoons
	Iron			lamp, implements, sickles, knives
	Gold	coins		
	Semi-precious stone			Crystal beads
	Steatite/			
	Soapstone		casket	caskets
	Shell			bangles
	Faience			beads
	Ivory			combs

MAP-32

SITEWISE DISTRIBUTION OF RAW MATERIALS

IN RAJASTHAN and GUJARAT c. 300- 500 A.D.



Sitewise Distribution Of Manufactured Objects

Chart 12b shows the different raw materials used in the Gupta period. They are copper, iron, gold, silver , rock-crystal,conch, shell, faience and ivory used for the manufacture of objects.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been found in the region.

Character of Sites and Distribution of Manufactured Objects

Artifactual and architectural remains such as coins, pottery, sculpture and temples from the period between the third to the fifth century A.D. corresponding to the period of the Gupta dynasty are scattered throughout the surroundings. Pottery and terracotta objects of this period have been found from Bhilwara (I.A.R. 1984-85:66-9; 1980-1:93). There are some urban sites datad to this period. At Sambhar, a fragmentary pottery tablet and terracotta plaque of a flying deva in typical Gupta style of this period was recovered (Sahni 1999: 37, 30). A group of Uma-Maheshwar reliefs of c. 459 A.D. as well as terracotta objects, hollow pendants and tablets and pottery objects such as jars are also found from here. These are datable to the Gupta period (Sahni 1999: 68-9). Pottery pieces of river Goddess type and and a spout in form of Makara are datable to the early Gupta period at Rairh (Puri 1998: 14). At Nagar, several artifacts have been found from the period between the fourth and seventh century A.D. They are ivory combs, shell bangles, copper, spoons, antimony rods, finger rings, and iron implements such as sickle, knives, faience beads and crystal beads (Ghosh 1990: 154).

Coins of Gupta rulers occur at several areas of this region. A coin hoard comprising gold coins of Gupta rulers have been found from Bayana in Bharatpur area (Chhabra 1986) and gold coins from Bairh in Tonk district, Bundewali Doongri in Jaipur district and Ajmer (I.A.R.1960-61: 56; Hooja 2006: 136). Gold coins have also been recovered from, Rairh in Tonk district. Coins of Kumaragupta were found in Sirohi region and silver coins of Gupta rulers have been found from Jaipur (Dhoundiyal 1967: 51).

Structural remains of the period are known from different areas of Rajasthan. At Sambhar, a well defined stratum of dwelling units is assignable to this period (Sahni 1999: 26). The settlement at Nagari was represented by a stone fortification, where

remains of a temple were found (Ghosh 1990:154; Sharma 1953: 154). Inscribed stones, moulded plaques and sculptures suggest the occupation of the town from the third century B.C. to seventh century A.D. (Sharma 1953).The Charchauma Temple in Kota area dates back to the Gupta period. At Rang Mahal and Sambhar, the building remains demonstrate the use of burnt bricks in the classical period (fourth-seventh century AD) (Ghosh 1990: 154).

The Rang Mahal culture of the Rajasthan-Sindh region ,Badopal, Munda-Pir-Sultan ri-Theri in northern Rajasthan have produced terracotta plaques attributed to late Kushana and early Gupta period (Hooja 2006: 136) . The torana pillar in the ruined fort of Mandsor has an inscription in Gupta script (Agarwal 1979: 20). Little direct evidence of administrative system in Rajasthan during the rule of the Gupta dynasty (fourth–sixth century A.D.) is known. A Gupta seal from Dahlia near Bikaner bearing the inscription '*Samekajaka Kumarmatyaadhikaranasya'* is noteworthy in this regard. The text implies the existence of a local administrative representative of the empire in northern Rajasthan province (Hooja 2006: 136). Other epigraphs and artifacts of some contemporaries of the Guptas ruling in Rajasthan are known from different sectors. An inscription of the Yaudheyas datable from second to the fourth century was found from Vijaygarh in Bharatpur as noted by Saran (Rydh, 1959: 203). Inscription of the Aulikara dynasty that ruled in south east Rajasthan is reported from Gangadhar in the Jhalawar area dating c. 423 A.D. (Hooja 2006: 140). Rang Mahal culture yielded a steatite casket with a lid having a depicting a hunting scene of the Sassanian period (c.420-440 A.D.) as reported by Ghosh (ed. Magarbandhu, Ramachandran, Sagar and Sinha 1991: 234). It indicates that the Bharatpur-Alwar area was possibly a part of the Gupta empire (Hooja 2006: 137).

The resources used in the region are of copper, iron, gold, silver steatite, sandstone, conch and ivory. At Sambhar, metal objects such as iron hanging lamp, nails and double edged daggers and copper needle, fingering of copper wire are found. Rock-crystal is used as a pendant and has been found at Sambhar. An ivory comb and a conch disc are also ascribed to this period. Sandstone has been used as grinding stone at Sambhar. Gold and silver used in manufacture of coins has been found at Bayana, Boondewali Doongri and Bairh, Jaipur and Ajmer.

According to Hooja (2006), information about Rajasthan's polity and administration vis-à-vis the Gupta Empire is fairly sketchy at present. The region was primarily ruled by different feudatories of the Guptas in certain parts of Rajasthan. These were the Yaudheyas around northern Rajasthan and Aulikaras in the south eastern part of Rajasthan (Hooja 2006: 135, 136,139-140).

Raw Materials Available Within The Sub-Region

The availability of copper, iron, rock-crystal and sandstone has been noted on p.30 and 55.

Silver

In Rajasthan, silver was collected as argentiferous galena of lead zinc ores of Zawar, Rajpur, Dariba and Agucha. It has been noted by Chakrabarti that "Silver mostly associated with galena assays fifty grams per tones of ore" (Chakrabarti 1997:116).

Gold

Gold dust was found in the sands of Luni and Khari rivers in the Ajmer-Marwar district (Ball 1881: 204). Old workings of gold have been reported from Sunarkuri in Ajmer district, Jodhpur and Sirohi districts (Bulletin of G.S.I. No. 38, Part 1, 1974: 144).

Raw Materials Available Outside The Sub-Region

GUJARAT

Ivory and Conch

Ivory and conch is available from the vast forest cover and the coastline respectively.

Epigraphic, Numismatic and Literary Linkages

From the start of the Christian era, Saka rulers played a prominent role in Gujarat's history. However, after c.296 A.D. the older branch of the Kshatrapas came to an end. The latter Kshatrapas did not assume the title of Mahakshatrapa (Majumdar 1977: 126).The last known Saka–Kshatrapa ruler of the new line was Rudrasimha III who ruled upto c.388 A.D. Thereafter, the Kshatrapa dynasty was replaced by the Gupta reign with the conquest of Gujarat by Chandragupta II. Evidence of conquest of Saurashtra by Chandragupta II is to be seen in his silver coins which are imitated from Saka Satraps (Raychaudhuri1996: 451-2). Coins of Gupta rulers

such as Chandragupta II and Kumargupta were found in different places in Gujarat. About two thousand varieties of silver coins of Kumargupta were recovered from Amreli. Some silver coins of Gupta monarchs were also found at Anand and Kheda. The Junagarh Rock Inscription of Skandgupta in the Kathiawar Peninsula also attests to the presence of the Guptas in this region (Rajyagor 1982:14; Bhandarkar 1981: 296).

Material culture with regard to Gupta period in Rajasthan is mainly represented by coins, structural remains, inscriptions, terracotta objects and pottery. The raw materials used for manufacture were gold, silver, copper, iron, sandstone, rock-crystal was used. Most of these were available locally. The only resources procured from outside were ivory and conch from Gujarat. These finds could be sporadic in nature. No manufacturing activity has been reported from this period in the region.

Gujarat

Situated in the western part of Indian subcontinent, Gujarat was an important centre for trade and commerce throughout history. The western Kshatrapas were the rulers of Saurashtra and the Kathiawar peninsula till c.388 A.D. when Chandragupta II annexed the region to form part of the Gupta empire (Raychaudhuri 1996: 451-52). The different towns in Gujarat with Gupta period cultural material are urban centers like Nagara, Amreli, and Timbarva, Dhatva and Dwarka (Mehta 1968; Rao 1966; Mehta 1955; Mehta and Chaudhury 1975; Ansari and Mate 1966).

Sitewise Distribution Of Manufactured Objects

Chart 13b shows the different raw materials used in the Gupta period. These are copper, iron, lead, gold silver, chalcedony, agate, carnelian, jasper, crystal, sandstone, quartzite, granite, steatite, chank, coral, shell and bone.

Evidence of Manufacture of Finished Products At Different Sites

Chank: Turbinella Pyrum linn was a material used at Nagara for making a variety of ornaments. The antiquities reveal besides finished products, slices of chank and their stems. Evidence of waste products of this industry has been obtained from Baroda, Vadnagar, Amreli and other sites. These waste products of manufacture indicate that chank industry might have flourished at Nagara (Mehta 968:127, 130).

Chart 13 b
Gujarat—c. -300—500A.D.

Raw Materias	*Nagara*	*Dhatva*	*Dwarka*	*Timbarva*	*Amreli*	*Kumarkhan*	*Mahudi*	*PrabhasPatan*
Copper/Bronze	rings,nails, lid,bowls, bar,rods, coins	ear stud, kohl sticks, wire,box			bangles, finger ring, miniature bell, nose ring, blade, antimony rod			jar
Lead	ear studs	ear studs						
Iron	nails,knives, spearheads, blade of chisel spearhead, dagger,arrow-heads,fishing hooks,spike, chisel	hoes,blades, pipe,nails, blade		wire, nails, fragment of sickle, disc	knife, dagger, spearhead, arrowheads, fish-hooks,			
Gold						coins		objects
Silver					coins		coins	
Semi-Precious stone	Chalcedony,Agate, beads, Carnelian, Jasper beads				Jasper, Chalcedony beads, Quartz beads			
Lapis Lazuli	beads				beads			
Ordinary Stone	Sandstone fragmented querns, mullers, Granite quern, muller,image Quartzite muler	pestle, balls		Quartzite quern				
Steatite/ Soapstone	beads							
Shell/Chank		Chank bangles, Shell beads	beads	bangles	beads, Coral beads			

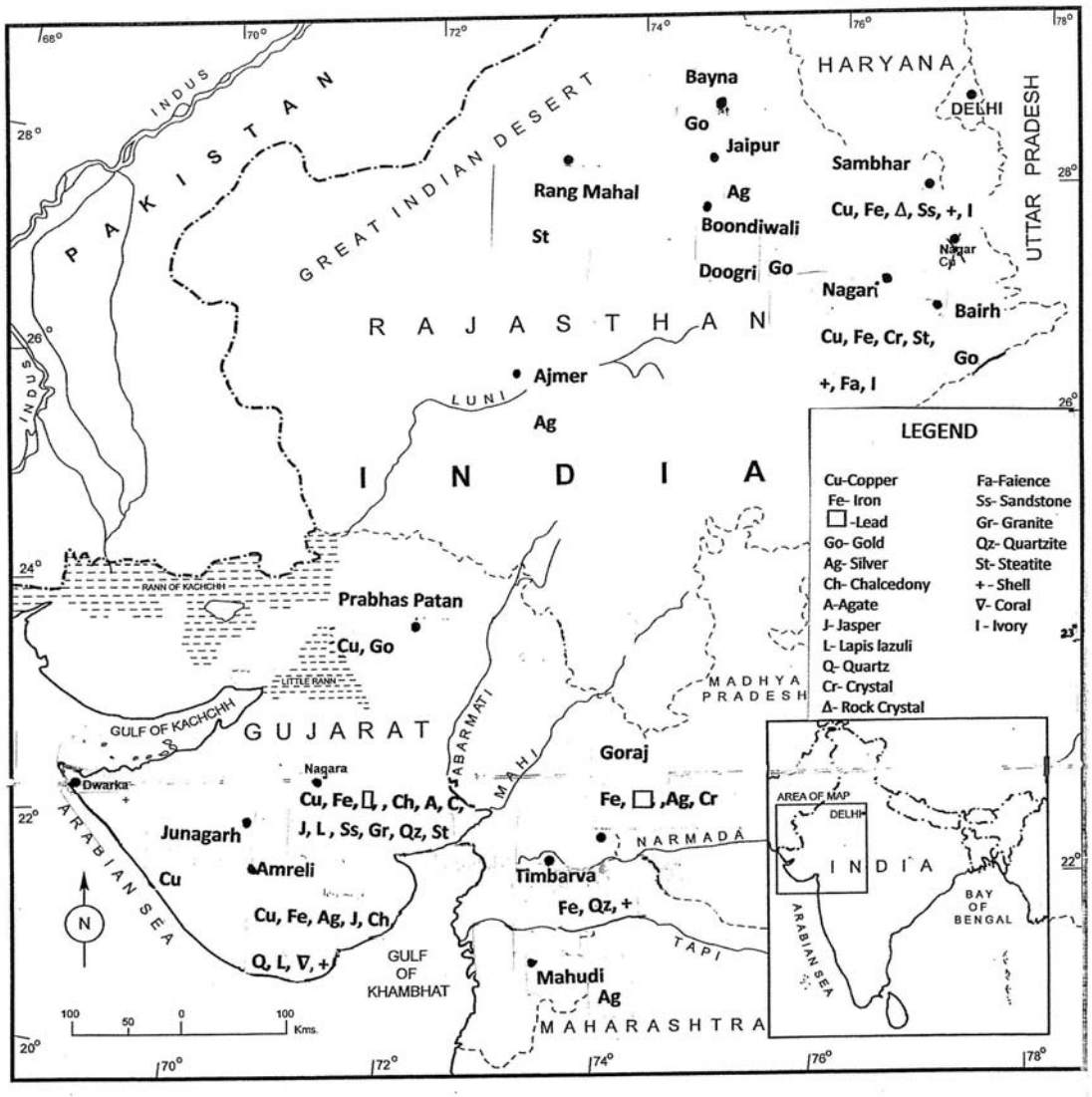
Chart 13 b (continued)

Raw Materials	*Junagarh*	*Goraj*	*Jamnagar*
Copper/Bronze	coins		copper plates
Iron		nails	
Lead		piece	
Silver		coins	
Semi-Precious stone		Crystal bead	

MAP-33

SITEWISE DISTRIBUTION OF RAW MATERIALS

IN RAJASTHAN and GUJARAT c. 300- 500 A.D.



Iron: At Dhatva, the surface was strewn with slag and hematite stones and raw materials for iron smelting was also obtained. Lumps of iron and metallurgical tap slag and chunks of iron ore were also encountered on the surface. Excavation indicates that the iron smelting industry grew in strength with time (Mehta and Choudhury 1975: 18, 48).

Character of Sites and Distribution of Manufactured Objects

Nagara situated on the tip of the Gulf of Cambay in the coastal plain, was occupied from the early centuries of the Christian era. Roman amphorae were an important find here and were used for dating the antiquities here.The western trade of this region was most profound in the first century A.D. Chank industry has been noted here (Mehta 1968: 8, 17). Period III has been given a long span from first century B.C. – A.D. to eighth-ninth century A.D. From this strata were recovered seals, coins, chank bangles, terracotta objects, stone objects, beads of glass and stone. According to Mehta, this is evidence of the active industry and commercial contacts with Rajasthan, Saurashtra, Central Asia and the West. This is the most prosperous period of this site (Mehta 1968: 167-68). The mound at Dhatva is known as Rundhi Mora. Roman amphorae have been recovered from here in the early Christian era. The ceramic tradition indicates that the settlement can be dated from fourth-fifth century B.C. to fourth century A.D. Iron smelting industry was noted at all levels at Dhatva (Mehta and Choudhury, 1975: 1, 9).

The resource usage at the urban sites is not varied. Copper and iron has been used extensively at Nagara and Dhatva. Copper artifacts are mostly in the form of antimony rods, rings, lids, bowls, wires and box. Iron weapons and implements are the most common of all antiquities. They are arrowheads, spearheads, knives, spikes, chisels, nails, daggers, hoes and pipes. Lead ear studs are found at both these urban sites. However gold and silver artifacts are absent from both the sites. This seems a bit striking as these urban sites yielded artifacts of other materials. Semi-precious stones such as chalcedony, agate and jasper have been used as beads only at Nagara. Lapis lazuli beads are also found here. Ordinary stones as sandstone, granite and quartzite have been used at Nagara in the form of querns and mullers. Steatite beads are only seen at Nagara. But chank bangles and shell beads are only found at Dhatva.

The second tier of settlements in Gujarat is Timbarva, Prabhas Patan, Goraj, Mahudi and Jamnagar. Timbarva in Baroda district lies near the ancient township of Karwan.

The latter was an important religious centre associated with the Pasupati sect. Ceramic evidence shows that the site was occupied from late centuries B.C. to tenth-eleventh centuries A.D. After this time the site was deserted (Mehta 1953: 2, 4). Gupta coins have been found at Prabhas Patan in Vadodara district (I.A.R. 1956-7: 17). Mahudi in Surat district has yielded silver coins of Kumargupta (I.A.R. 1958-9: 66). Goraj lies to the east in Gujarat. According to the author, Goraj was of sufficient importance in the ancient times. A brick temple was unearthed here. It was rebuilt in the Gupta times. Coins of Gupta rulers have been recovered here (Pande and Vyas 1989-90: 107-8). Lothal in Ahmedabad district has a chronology from the first century B.C. to fourth century A.D. The site has yielded red polished ware in form of sprinklers (I.A.R. 1954-5: 13). Jamnagar lies in the peninsular region of Gujarat of Kathiawar. Kshatrapas and Gupta rulers occupied the area till the fifth century A.D. Copper plates of Gupta period have been found here (Bhan 1986:10-12).

The resource-use at these sites is as follows. Bronze has been used at Prabhas Patan in the form of carinated jar and dishes. Iron artifacts are found only at Timbarva and these are nails, wire and blade. A single iron nail is found from Goraj. No other site in this segment has yielded iron. A lead piece is found at Goraj. Gold and silver has been used at Prabhas Patan and Goraj only. Objects of gold have been left unspecified while silver coins are found from Goraj. Amongst semi-precious stones, Goraj is the only site from where a crystal bead has been recovered. Quartzite pestle and mullers have been found from Timbarva. Bone points have also been found only from Timbarva. The number as well as the variety of artifacts is severely limited in these small settlements.

Among the religious sites, Dwarka is an important one. It is a city associated with the legend of Krishna. According to A.S. Altekar, the city is believed to be as old as the third century B.C. As believed by Altekar, Dwarka was swallowed up by sea about third century B.C. (Ansari and Mate 1966: 2, 23). Amreli is a well documented site with regard to the Gupta period. Saurashtra was an administrative centre under the Guptas and several terracotta figurines, coins and pottery of the period are found at Amreli. The site had a continuous occupation from first century B.C. to eighth century A.D. It appears to have been an important center for Bramhinism and Buddhism and received patronage from the Khatrapa and Gupta rulers. Buddhist

structural remains and Bodhisattava images have been found here (Rao 1966: 9, 14). Amreli stands out in terms of variety as well as quantity of artifacts. Copper artifacts are in the form of bangles, antimony rods, blade, bell, finger and nose rings. Iron artifacts are also found at Amreli in good numbers. They are mostly weapons and implements. Arrowheads, spearheads, blades, daggers, fishhooks, sickle and disc are some of them. Coins of silver are also found here. Amongst semi-precious stones, the use of jasper, chalcedony and quartz as beads are seen here. Lapis lazuli beads have been found at this religious site only. Also waste products of shell and coral beads are found at Amreli and Dwarka indicating the evidence of manufacture. Bone points and awls are the other artifacts found here.

Raw Materials Available Within The Sub-Region

The presence of semi-precious stones such as agate, chalcedony and carnelian, shell and coral has already been noted. (p.111, 116-7).

The presence of copper, gold and jasper has been noted on p.116-.3

Crystal: Found at Tankara in Kathiawar near Rajkot in huge beds of quartz rock (Mallet 1887: 64).

Raw Materials Available Outside The Sub-Region

RAJASTHAN

The presence of steatite and silver, lead and iron has been noted on p. 55, 109.

CENTRAL INDIA

The occurrence of sandstone has been noted on p. 104.

AFGHANISTAN

The presence of Lapis lazuli has been noted on p.31.

Epigraphic, Numismatic and Literary Linkages

Gujarat during the Gupta period was interacting with Rajasthan to its north and Central India adjacent to it on the east. The Western Kshtrapas are known to have ruled over a vast territory in Western India. It included parts of Rajasthan in the Marwar province and Saurashtra (Raychaudhuri 1996: 449-50) .The illustrious Gupta ruler Samudragupta had

already annexed the western non-monarchical tribal states of Yaudheyas, Arjunayanas, Abhiras and Malavas in the Punjab and Rajputana. A few minor rulers of the Malwa region also accepted the overlordship of the Gupta monarch. The campaign has been vividly described in the Allahabad *prasasti* of Samudragupta (Majumdar 1977: 231). Chandragupta II in c.380 A.D. extended the empire by invading the Sakas country in Saurashtra. The campaign of Chandragupta II against the Westerrn Kshatrapas is apparently referred to in the Udayagiri cave inscription and the Sanchi inscriptions. The fall of the Sakas is alluded to by Bana in *Harshachrita* and the annexation of the territory is proved by the coins of Chandragupta II (Raychaudhuri 1996: 490). Inscriptions of Gupta rulers in the Malwa region also prove their hold over the region. These are the Eran Stone inscription of Samudragupta, Vidisa Stone inscription of Ramagupta, Udayagiri Cave inscription of Chandragupta II and the Sanchi Stone inscription of Chandragupta II (Bhandarkar 1981: 221,232,243,248).

Gujarat in the third to the fifth century A.D was a resource rich region. A large number of resources were available within.These were varieties of semi-precious stones such as agate, chalcedony, carnelian and jasper. Shell and coral were also locally available. Metals such as copper were also obtained from within. The procurement of a few raw materials such as iron, lead, silver and steatite was from the neighbouring region of Rajasthan. Only sandstone was possibly obtained from Central India. The shell and iron industry in the province was flourishing in the Gupta period. It is known from the remains of manufacturing activities at sites such as Dhatva and Nagara.The connection of urban areas as Nagara and Amreli with far flung regions as Afghanistan is proved by the use of lapis lazuli in beads. On the whole the region was interacting with its neighbouring areas for resource procurement.

Maharashtra

The Vidharba and the upper Godavari region witnessed the growth of political power under the Satavahanas. The region also saw the spread of Buddhism in form of several Buddhist rock-cut caves Bhaja, Karle, Kanheri, Pitalkhora, etc.that developed on the Deccan trade route from the Gangetic valley. The discovery of a Bharhut type stupa at Pauni in the Bhandara district provided additional evidence of the spread of Buddhist creed in the region (Chakrabarti 1997: 228).

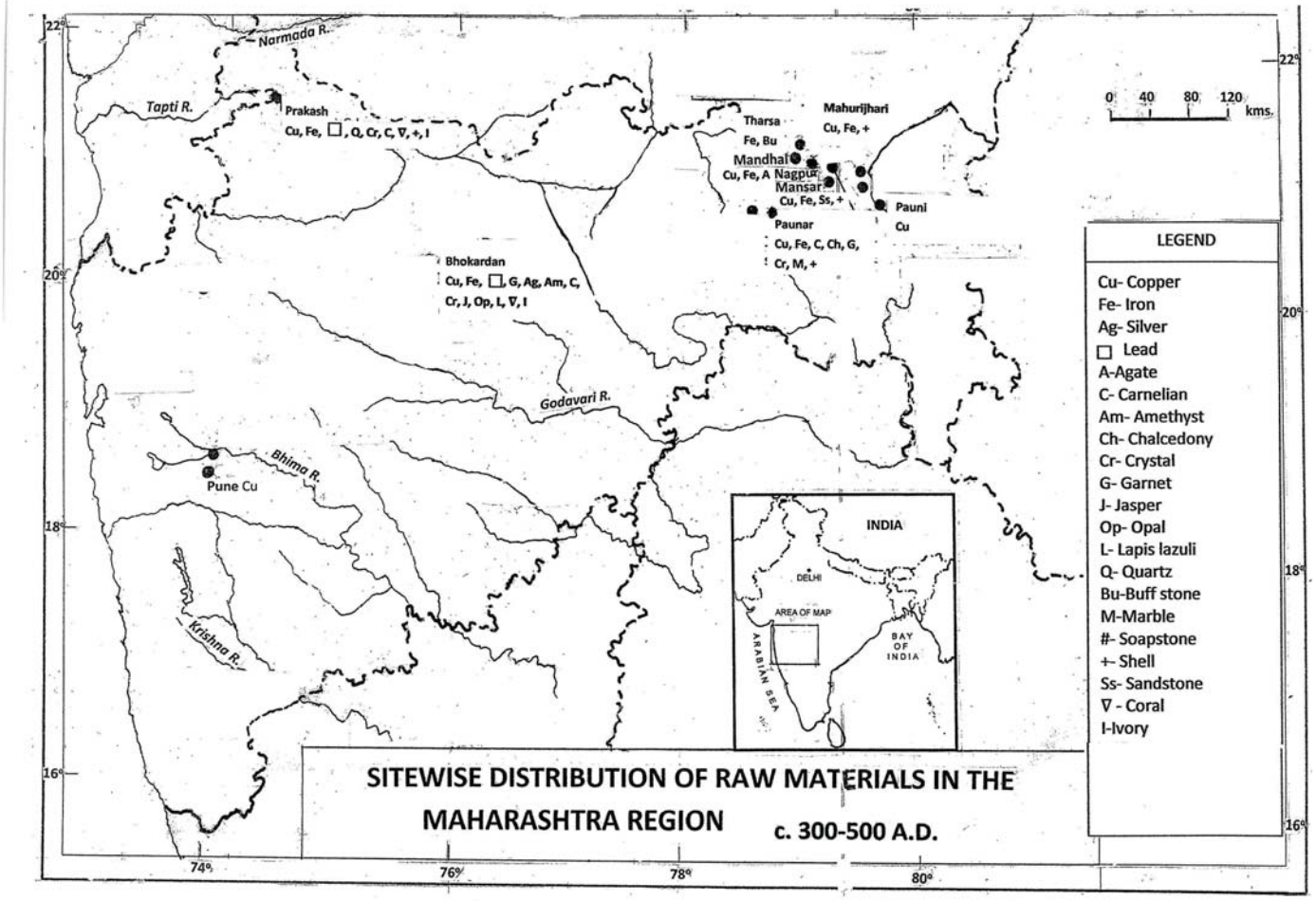
Chart 14 b
Maharashtra---c.300—500A.D.

Raw Materials	*Pauni*	*Paunar*	*Bhokardan*	*Mandhal*	*Paundar*	*Tharsa* *Arambha*	*Mansar*
Copper/Bronze	Plates	fingerrings, rattle ,rod	coin,bangles, finger rings anklet,ear ornament, rattles	plates	coins		coins
Iron		nail,blade, fragment,chisels sickle,spearhead, arrowhead,bangle, hooks ,clamp	pan,pot,nail parers,chisels, sickles,knives, rivets,nails, rings	nails		nails	nails,fish-plates,chains, spatula,needles, handles,clamps, hoes,axes,rods, angles,points, chisels,hooks, ferrule
Lead			object				
Gold			Gold foil beads				
Silver			Silver foil beads				
Semi-Precious stone		Carnelian,Chalcedony beads,Crystal,Garnet beads,Crystal ear stud,	Amethyst, Carnelian beads, Crystal, jasper beads, Opal beads	Agate beads		unspecified beads	unspecified beads
Lapis Lazuli			beads				
Ordinary Stone		Marble bead				Buff sand-stone bangles head of Mother Goddess	Sandstone blocks
Steatite/ Soapstone	Soapstone image, plaque`						
Shell/Coral		bangles	Coral beads, bangles, discs			bangles	bangles
Ivory			kohl sticks, bangles, ear-ornament, dice, points				

Chart 14 b (continued)

Raw Materials	*Prakash*	*Mahurijhari*
Copper/Bronze	antimony rods,pin, bangle,lid, bell,coins	Copper plate, objects
Iron	rod,nail, bangle,shaft hole,axe, coiled ring, clamp	nail, clamp, knife,chisel, adze,arrowhead
Lead	spool	
Semi-Precious stone	Quartz, Rock Crystal, Carnelian beads	unspecified beads
Shell/Coral	Coral bead, Shell bead, bangles	bangles
Ivory	comb	

MAP-34



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE MAHARASHTRA REGION c. 300-500 A.D.

The Indo-Roman trade through the ports of Sopara and Kalyan was flourishing in the early centuries of the Christian era. This was another feature of early history of this region. The Vakatakas ruled in Vidharba in the fifth century A.D. and were the feudatories of the imperial Gupta rulers (Raychaudhuri 1996: 477; Majumdar and Altekar 1986:123). The different sites with cultural material of this period are Pauni, Bhokardan, Paunar, Mahurijhari and Prakash (Nath 1994; Deo 1973; Dhavalikar 1968; I.A.R. 2001-02: 123-8; Thapar 1964-65: 8-129).

Sitewise Distribution Of Manufactured Objects

The different raw materials used in the region during the Gupta period are detailed in the chart 14 b. These are copper, iron, lead, gold, silver, carnelian, chalcedony, crystal, garnet, quartz, opal, lapis lazuli, marble, sandstone, soapstone, steatite, shell, coral bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Beads: Unfinished and semi finished beads were found in good numbers at Pauni. It shows that the bead manufacturing industry flourished here in the early historical period as well (Nath 1994: 64).

Carnelian and Crystal: Flaked core pieces of carnelian were unearthed from deposits of post-Satavahana levels. It indicates that carnelian beads were manufactured at Bhokardan. A number of partly perforated beads have also been found. Several worked nodules also indicate that crystal beads were executed here. (Deo 1973: 121, 124)

Excavations at Mahurijhari in Nagpur district revealed one of the largest bead manufacturing centres in historical period dated c. 400-500 A.D. The site yielded large quantity of beads, bead wastes of all types in various stages of production in semi-precious stones like carnelian and crystal. In the assemblages were heated nodules, polishers, preliminary chipped cores, bead blanks, roughouts, and beads with minor chipping, semi and fully grooved beads, partially and fully drilled beads, split beads, partially and fully polished beads with its debitage. These were mainly from the habitational deposits (I.A.R. 2001-02: 124).

Shell: A number of shell bangles and waste pieces of columella from Period III (third-eighth century A.D.) at Paunar indicate that it was a flourishing local industry (Deo and Dhavalikar 1968:99).

Iron: Furnaces in the verandah at Kanheri dated to fifth century A.D. have been noted. Excavation revealed iron ores, furnaces, crucibles and iron slag used in the fashioning of metal objects (I.A.R. 1969-70:22).

Character of Sites and Distribution of Manufactured Objects

Some of the urban sites in the region are Pauni, Paunar, Bhokardan, Mahurijhari and Prakash (Deo and Joshi 1969-70; Dhavalikar 1968; Deo 1973; Thapar 1964-5).

Pauni in Bhandara district has presence in the Gupta period as shown by a copper plate grant of Pravarasena II of the Vakatakas who ruled over the Vidarbha region from third to sixth century A.D. The town was formerly called Padmavati apparently named after his queen (Deo and Joshi 1969-70: 5, 9). Excavations revealed a stupa complex at Jagannath Tekdi mound. The trenches showed the existence of a *pradakshina patha*. Railing pillars with Hinayana motifs carved on them associated with an inscribed coping stone nearby the ancient mound indicated the existence of Buddist faith in the Vidarbha region (Deo and Joshi 1960-70: 14, 19). The Vakataka period at Pauni revealed a fortification of dry stone masonry built over an earlier fortification (Chakrabarti 2005: 59). Paunar has been identified with ancient Pravarapura; the capital of the Vakatakas who ruled over Vidarbha from the third to the sixth centuries A.D. Habitation here continued from the earliest times to medieval times. The structural remains of Period III (third to the eighth century A.D.) are characterized by well planned foundations.The Vakataka period was a prosperous period at Paunar (Dhavalikar 1968: 1-2, 7, 11, 115). Brick structures, characterized by well planned foundations, ring wells, and floors of compact clay, pottery, beads, terracotta and stone sculptures depicting the Vakataka art idiom are some of the characteristics of this period (Deo and Dhavalikar 1968: 7-9). A chalcedony heart shaped amulet with a neat carving of the seated Buddha figure in relief is an interesting find of the Gupta-Vakataka period at Paunar (Deo and Dhavalikar 1968: 80).A few copper coins of the Kadamba rulers of Karnataka of fifth-sixth century A.D. have been found at Paunar (Deo and Dhavalikar 1968: 2-3). Bhokardan or ancient Bhogavardhana stood on the ancient trade route from

Ujjaini to Pratishthana (Deo 1973: 3).The post Satavahana layers yielded structural remains in form of floor patches, stray alignment of bricks, storage jars and postholes. Two ringwells, one of wedge shaped bricks and other of pottery rings were the most important discoveries in the structures exposed (Deo 1973: 14).

In this period, terracotta plaques were found depicting *Lajja Gauri* and sculptures of Siva. The revival of Brahmanical cults in the Gupta-post Gupta period is corroborated by the evidence of Brahmanical caves here (Deo 1973: 215). Mahurijhari in Nagpur district was a well known megalithic burial site with several stone circles around the site. Evidence of early historic settlement revealed the evidence of a copper plate, seals, intaglios, beads, bricks and other antiquities of the Gupta-Vakataka period (I.A.R. 2001-02: 123-4, 128). The site laid bare evidence of a large bead manufacturing centre in form of finished as well as unfinished beads of semi-precious stones and equipments which has been elaborated above Also, terracotta beads, polishers, lamps with stand, terracotta figurines, Lajja Gauri plaque and a human head of Gupta Vakataka period was recovered. A large amount of full sized burnt bricks and brick bats belong to this period at different levels. Historical data at the site is supplemented by copper plate inscriptions of Vakataka ruler Prithvisena II (Deo 1973: 2). At Brahmapuri near Kolhapur, relics of Roman origin were discovered that comprised clay bullae, sealings, some bronze vessels, and a statue of Posedion in the third phase dated between c.200-500 A.D. The site has yielded red polished ware, Andhra, Kshtrapa coins, and occationally Kushana and Gupta coins (Sharma 1953: 158). Kaundinyapura in Amraoti district revealed terracotta votice tanks in the late Satavahana period assigned to c. 200-500 A.D. (Chakrabarti 2005: 64).

The use of different resources can be seen at these urban sites. Copper artifacts are ample at sites like Pauni, Paunar, Bhokardan, Mahurijhari and Prakash. They are in the form of coins, finger rings, ear rings, vessels, rattle, rod, anklet and bangles and copper plates. Iron artifacts are also in good numbers at these sites. These are sickles, clamps, nails, rod, parers, rings, pan, pots, rivets, arrowheads and spearheads. Lead objects as spool are found at Prakash and Bhokardan. Gold and silver foil beads are found at Bhokardan. The use of different semi-precious stones as beads is also seen mostly at the urban sites only. The varieties are carnelian, quartz, chalcedony, amethyst, jasper, opal and garnet. Lapis

lazuli beads are also exclusive to Bhokardan. A marble bead is found at Paunar. Also shell, coral, bone and ivory objects are seen at these sites.

The small sites of the region are Mandhal, Paundar, Tharsa, and Arambha and Mansar (I.A.R. 1975-76: 36; 1991-2:74, Nath 1991-2: 71; 1997-8:131, Joshi and Sharma 1997-2000: 127-8). At Mandhal, copper plate inscriptions of the Gupta-Vakataka period are found (I.A.R. 1975-76: 36). At Arambha, a continuous sequence of cultures from protohistoric to the medieval period has been revealed (Nath 1991-2: 71). Of these sites, Mansar produced a variety of artifacts of iron. These are nails, chains, spatula, needles, angles, clamps, axes, hoes, rods, points, chisels and ferrule. Sandstone blocks and shell beads are the objects found at these sites.

Kanheri was one of the religious sites known among the many rock-cut Buddhist caves of second century B.C. The third level here is dated to the fifth century A.D. on the basis of building of furnaces in the verandah alongwith ceramic and numismatic evidences. Most of them are small cells; each of them has a stone platform to serve as a bed. There is one congregation hall that is supported by massive stone pillars. Majority of the caves are monasteries. All of them have elaborately carved sculptures, reliefs and pillars and encompass rock-cut stupas for worship (I.A.R. 1969-70: 22). Ajanta in the Aurangabad district hosts the world famous rock-cut caves associated with Buddhist order. The caves, comprise *chaitya* halls (sanctuary) and *sangharamas* (monastery). A number of Buddha figures can be seen on the façade and the interior. This is the most prolific and vigorous phase of structural activity (Mitra 1956: 4, 6). The second phase of the rock-cut caves (cave 16 and 17) began with the Vakataka rulers of fifth-sixth century A.D (Ghosh 1996: 14).

Raw Materials Available Within The Sub-Region

The presence of copper, sandstone, steatite and shell and ivory has been noted on p.124, 126.

Iron

Iron-ores occurs in the southern part of the Ratnagiri district. Banded haematite-quartzite and highly ferruginous laterite forms of iron-ore are found in the district at Asoli, Khanavli, Kochsa, Mahapan, Pat, Parule, Dhanpur, Kalse, Amberi,

Damoli and Otavane (Maharashtra District Gazetteer: Ratnagiri district, 1062: 22). Banded haematite-quartzite and their interbedded purple ferruginous layers have given rise to a high grade lateritic hematite in small pockets towards east of Maselli and near Gogi bhesh and Pahugaon in the Bhandara district (*Maharashtra State Gazetteer*: Bhandara district, 1979: 27).

Lead and Galena

Fragments of lead and galena ore are reported from Nimbha north of Nagpur, near Pauni in Bhandara district (Maharashtra District Gazetteer 1966: 14; 1979: 27).

Semi-Precious Stones

Several districts such as Kolaba, Nagpur, Amravati, Jalgaon, Nanded and Parbhani adjoining the Deccan Traps in the region have innumerable cavities which are filled with secondary minerals such as quartz, chalcedony, jasper, agate, and rock-crystal (Maharashtra State Gazetteer1964: 13; 1966:14; 1968:14; 1962: 9; 1971: 12; 1967:20). Crystalline quartz, chalcedony, agate, jasper, and opal are found in the vesicles of basalt flows especially in the Aurangabad district (G.S.I. Misc. Pub. No. 30, Part II, 1974: 33). Deposit of quartzite and garnet has also been found in southern region of Kanker district. Garnets of abrasive quality are found as placer deposits on the beaches of Maharashtra as well (Banerjee 1992: 387).

Sandstones

Sandstones are obtained from Kamthi division of lower Gondwana and Achalpur in the Amravati district. Gondwana Sandstone is used extensively as building material (Maharashtra State Gazetteer: Amravati district 1968: 13-14).

Raw Materials Available Outside The Sub-Region

The presence of marble (central India), and lapis lazuli (Afghanistan) has already been noted. (p. 31, 87)

Epigraphic, Numismatic and Literary Linkages

The connection between Maharashtra region and the central India is known by the finds of inscriptions of the Gupta period at several sites. The inscriptions of the

Vakataka rulers (known as the feudatories of the Imperial Guptas) of the Vidarbha region are found in the Central India. Inscriptions are found from Chhindwada district, Balaghat district, Betul district, Durg district in this region (Mirashi. 1963:28, 48, 58, 77, 89, 83, 92). The early caves of Ajanta were excavated by the vassals of the Vatsagulma branch of the Vakatakas (Ghosh 1996:14).

The province of Maharashtra was mostly dependent on neighbouring regions for obtaining a few resources like marble from central India during the third to fifth centuries A.D. Resources such as lapis lazuli, garnet and opal were used at urban sites only. It can hence be understood that such sites were engaged in long distance trade and were obtaining resources from far flung regions via trade. The movement of people making donations to Buddhist caves along the trade routes passing from different regions also facilitated trade activities. Also, the evidence of manufacture at the urban sites goes on to indicate that the region had a thriving urban culture in between the third and fifth centuries A.D. Procurement of raw materials from nearby and far off regions was part of the exchange mechanism.

Andhra Pradesh

In the period after the third century A.D, the Andhra region was controlled by different dynasties who ruled in small sectors scattered across the province. These were, the Chutu Satkarnis and the Ikshvakus in the Krishna district and a portion of the Guntur region; the Salankayana, the Bhrihatphalanayas and Anandagotra in the Krishna–Guntur regions; the Vishnukundins in the central and eastern Deccan and the early Pallavas in the Guntur-Prakasam and Nellore districts with their capital at Kanchi (Sarma 2008: 41-51) The presence of these dynasties is attested by their epigraphs in Andhradesha. The region is equally famous for large scale presence of Buddhism. Nagarjunakonda and Amaravati are two prominent Buddhist sites. Several Buddhist sites such as Veerapuram and Phanagiri are in the plateau region. The excavated sites in the region are, Yaleshwaram, Satanikota, Kesarapalle and Kudavelli (Khan 1963; Ghosh 1986; Sarkar 1966: 38-74; I.A.R. 1972-3: 39).

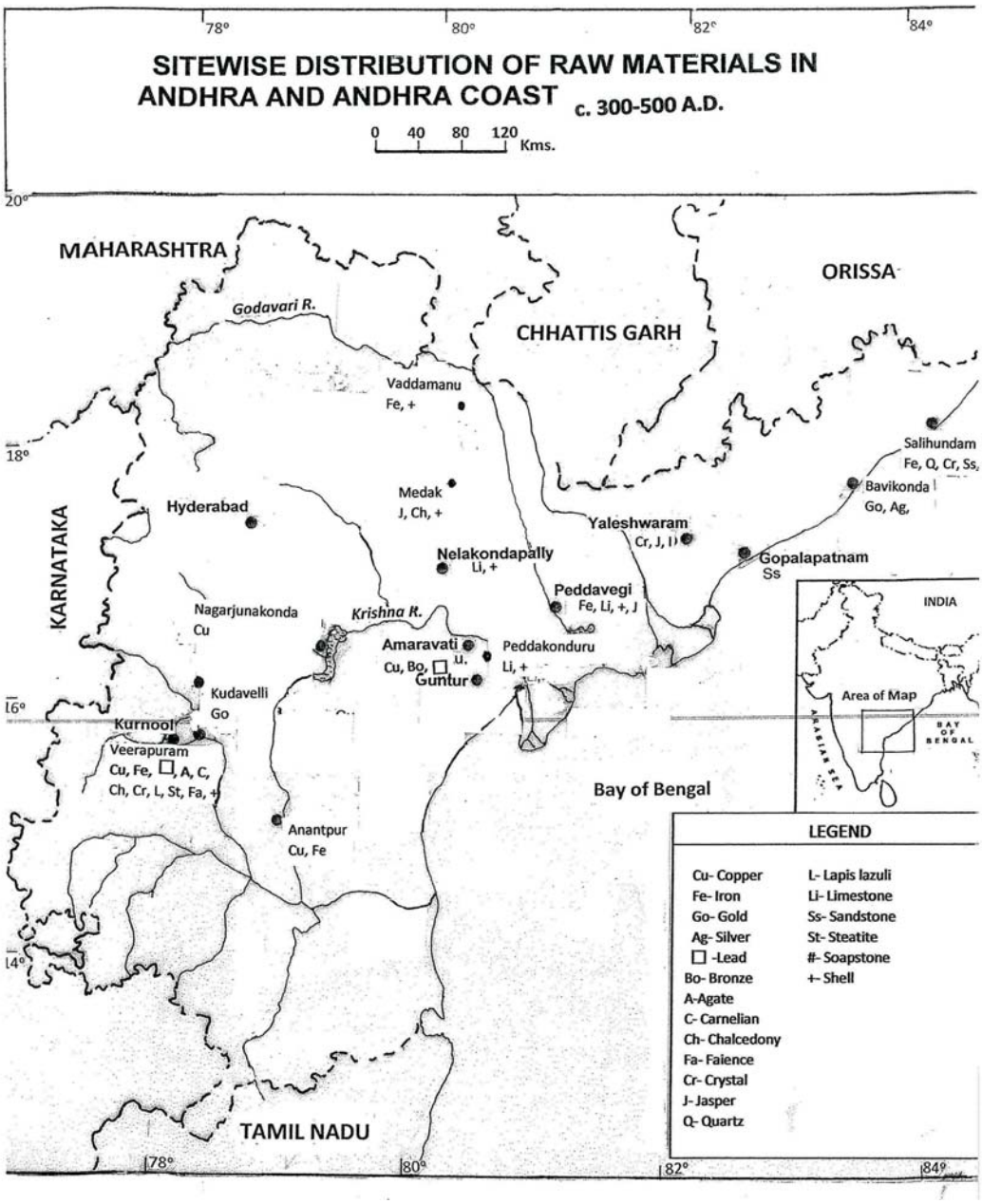
Chart 15b
Andhra—c. 300---500A.D.

Raw Materials	*Yaleshwaram*	*Karur*	*Medak*	*Kudavelli*	*Pondugula*	*Veerapuram*
Copper/Bronze		Copper plates				bangle pieces, rings, bull, sealing, spindle, nails, wires
Iron						knives,arrow heads, rivets, hooks, dishes, spoons, needle, ladles, bowls, rings,rods
Gold				Roman coins		
Lead						coins
Semi-Precious stone	Crystal pendant, Jasper bead		Jasper beads, Chalcedony beads			Agate,Carnelian beads,Chalce-dony, Crystal beads,
Lapis Lazuli						beads
Ordinary Stones					Limestone sculpture pieces	
Steatite/Soapstone						beads
Faience						beads
Shell			bangles		objects	bangles, rings
Ivory	tablet					

Chart 15b (continued)

Raw Materials	*Peddakonduru*	*Anantpur*	*Amaravati*	*Nagarjunakonda*	*Nelakodapalli*
Copper/ Bronze		coins	coins, Bronze images	coins	
Iron		objects			
Lead			coins		coins
Semi-Precious stone	unspecified beads				unspecified beads
Ordinary Stones	Limestone objects			images	
Shell	beads				beads

MAP-35


78°
80°
82°
84°
SITEWISE DISTRIBUTION OF RAW MATERIALS IN ANDHRA AND ANDHRA COAST c. 300-500 A.D.
0 40 80 120 Kms.
20°
18°
16°
14°
MAHARASHTRA
ORISSA
Godavari R.
CHHATTIS GARH
Vaddamanu
Fe, +
Salihundam
Fe, Q, Cr, Ss,
Bavikonda
Go, Ag,
Medak
J, Ch, +
Hyderabad
KARNATAKA
Yaleshwaram
Cr, J, I
Nelakondapally
Li, +
Gopalapatnam
Ss
Peddavegi
Fe, Li, +, J
Nagarjunakonda
Cu
Krishna R.
Amaravati
Cu, Bo, □, u.
Peddakonduru
Li, +
Guntur
Kudavelli
Go
Kurnool
Veerapuram
Cu, Fe, □, A, C,
Ch, Cr, L, St, Fa, +
Anantpur
Cu, Fe
Bay of Bengal
TAMIL NADU
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
LEGEND
Cu- Copper
Fe- Iron
Go- Gold
Ag- Silver
□ -Lead
Bo- Bronze
A-Agate
C- Carnelian
Ch- Chalcedony
Fa- Faience
Cr- Crystal
J- Jasper
Q- Quartz
L- Lapis lazuli
Li- Limestone
Ss- Sandstone
St- Steatite
#- Soapstone
+- Shell

Sitewise Distribution Of Manufactured Objects

The adjoining chart 15b shows the different raw materials used at sites of this region. They are copper, iron, crystal, jasper, chalcedony, limestone, shell and ivory.

Evidence of Manufacture of Finished Products At Different Sites

As per the archaeological reports no evidence of manufacture has been noted here. However, as reported by Haripada Chakraborty, the Vilavatti inscription of Pallava king Simhavarman II refers to different craftsmen like metal workers and leather workers who paid tax to the king. According to Chakraborty this inscriptions gives us information of the different arts and crafts practiced in the fifth century A.D. in the Andhra region in an indirect manner (Chakraborty 1978: 109; ed. Sarma 2008: 96-7).

Character of Sites and Distribution of Manufactured Objects

The notable urban areas of Andhra are Yaleshwaram, Satanikota, Kesarapalle and Kudavelli (Khan 1963; Ghosh 1986; Sarkar 1966: 38-74; I.A.R. 1972-3: 39). Yaleshwaram in Nalgonda district was a flourishing city at the time of the Ikshvakus. The site yielded remains of an extensive habitational deposit of the late Satavahanas, Ikshvaku, Vishnukundin and Pallava periods (Khan 1963: 2-3). Structures of burnt bricks were noted at the site.Two limestone pillars bearing a sixth century A.D. inscription were found apart from Vishnukundin coins from Period IV at Yaleshwaram (I.A.R. 1960-1: 3). Satanikota was a fortified site of the Satavahana period surrounded by a rock-cut moat. Baked brick structures identified as granaries was a noteworthy feature of this site (Ghosh 1986: 13-14, 78). At Kudavelli in Mahbubnagar district a noteworthy find is of two Roman gold coins and of the Byzantium period dated fourth-fifth century A.D. It indicated that the Romans and Byzantians had trade relationship with certain areas even after third century A.D. (I.A.R. 1972-3: 39). Kesarapalle in the Krishna district was mainly a megalith site with Period III A assigned to the period between second-fourth centuries A.D. (Sarkar 1966: 46). At Dhulikatta in Karimnagar district, a mud fortification and a brick wall built over rubble -foundation. A few post holes were noted over the structures (ed.Sarma 2008: 211). Other fortified settlements of this period were, Kesareghutta, Pishthapura and Tunmalagudem datable to the fourth-fifth century A.D. Excavations at Keasareghutta revealed a township of the Vishnukundin period. An extensive

fortification wall was built around the periphery. Pottery and coins of the Vishnukundin rulers of the fourth-fifth century A.D. were found here (Sarma 2008: 212). Pisthapura was another fortified town of ancient Andhra. It finds mention in the Allahabad Pillar inscription of Samudragupta (Sarma 2008: 213).

In terms of resource-use, the urban sites repertoire of artifacts is moderate. However, it is evident in the above discussion that these sites were rich in terms of structural remains. Most of them revealed brick structures and were fortified settlements from this period. At Satanikota, a granary (Ghosh 1986: 13-14, 78) was also reported. Kudavelli in Mahbubnagar has produced Roman gold coins indicating the continuation of a wide exchange network as late as the fourth-fifth centuries A.D. It is thus clear that more detailed reports on artifacts and finished products are awaited from these sites.

There are several smaller sites in the region. They are Medak, Pondugula, Peddakonduru, and Anantpur (I.A.R. 1987-88: 6; 1986-7:9; 2001-02: 2). The resource-use at these sites is marginally better. The use of semi-precious stones such as jasper and chalcedony are seen at Medak. Limestone sculpture pieces are seen at Pondugula. Besides shell objects are recovered from Medak and Pondugula. Peddakonduru is a post-Ikshvaku site in the Guntur district yielding limestone objects, stone plaques, semi-precious stone beads and shell beads of the fifth century A.D. of the period of the Anandagortin dynasty (I.A.R. 1986-7:9; 1993-4: 3). Anantpur yielded brick structures and early historical material such as pottery, beads, bangles, iron objects, coins and terracotta objects of the post Satavahana levels dated to the third century A.D. (I.A.R.2001-02: 2).

The region is scattered with religious sites of primarily Buddhist creed. They are Amaravati and Nagarjunakonda, Veerapuram in Kurnool district and Phanagiri in Nalgonda district.Veerapuram had revealed a group of thirteen temples in an enclosed wall. They belong to the previous period. The renovation and addition of temples was attributed to the Ikshvaku rulers (c.300-400 A.D.) (Sastri, Kasturibai and Prasad Rao1984: 30). At Amaravati, a large Buddhist establishment was unearthed. The Mahachaitya at Amaravati had a solid brick core and the dome was faced with a large number of beautifully sculpted limestone slabs. Post-Ikshvaku phase (3rd- 6th c. A.D.) yielded sculptures and metal images, coins of Vishnukundin rulers (Babu 1999: 124). Datable to the fourth-sixth century A.D. are a few bronze images of standing Buddha (Sarkar and Nainar 1972: 16). Phanagiri,

in the Nalgonda district, revealed a Buddhist stupa site of the early Christian centuries A.D. Excavations brought to light a mahastupa, stone pillared hall, congregation hall, viharas and other brick structures besides a lot of antiquities datable from the first to the third century A.D. The stupa showed evidence of renovation in the Ikshvaku (third century A.D.) and the Vinsnukundin period in the fourth-fifth century A.D. The monastic complex initially began during the Satavahana times (first century.B.C.) and continued up to the Vishnukundin times (fourth-fifth century AD) (I.A.R. 2000-01: 1-2). Nagarjunakonda, a ancient Vijaypuri was the celebrated capital of the Ikshvaku dynasty. Excavations revealed a citadel with grand fortification wall, ditch, gates and barracks (Soudararajan 2006; Sarma 2008; 212). The site produced a large number of sculptures which formed part of the décor of major stupas and independent images (Sarma 2008: 226). Excavations also revealed Brahmanical temples on the western side of the citadel area on the bank of the Krishna river. This area is dotted with a large number of Brahmanical temples with apsidal and oblong plans (Sarkar and Mishra 1966: 25, 28, 30). Copper coins of Vishnukundins and early Pallava rulers have been found here (Soundara Rajan 2006: 485).

The resource-use at the above mentioned sites is impressive. Copper and iron have been profusely used at Veerapuram. The artifacts range from knives, daggers, hooks, arrowheads, rivets, dishes, ladles of iron and bangles, bulls, spears, nails and wires. Lead coins possibly of Ikshvaku rulers were found at Veerapuram. Beads of agate, chalcedony, carnelian and crystal have been found. Lapis lazuli, faience and steatite beads have also been found besides shell bangles and rings from this site.

Raw Materials Available Within The Sub-Region

The presence of copper, lead, shell and ivory has already been noted on p.133 and 134.

Limestone

Enormous deposits are there at Narji, Koilkuntala and Dhone taluk (Rajgopal 1974: 14-15).

Semi-Precious Stones

Lahiri (1992: 359) has noted the availability of varieties of chalcedony i.e. jasper, agate, plasma, carnelian in small quantities in the Deccan traps on either side of Godavari near Rajahmundry. The gravels of the river also contain these stones.

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli (Afghanistan) has been noted on p. 31.

Epigraphic, Numismatic and Literary Linkages

H.P. Ray (1986: 77) brings to notice the find of red polished ware sherds incised with Kharosthi letters at Satanikota The use of Kharosthi script is a strong indicator of the north-western connection of this region. All these certainly point towards the movement of people from the north across the Vindhyas along trade routes both as traders as well as patrons of Buddhism.

The period between the third and fifth century A.D. in the Andhradesha can be summarized as follows. The spread of habitation during the period seems to be moderate. This is understood mainly on the basis of the number and variety of sites, and also the artifacts discovered from there. There is no evidence of manufacture of artifacts for the given period though references to craftsmen in the inscriptions have been noted. The region also utilized most of the raw materials from within it. These were copper, lead, shell, bone, ivory and limestone and semi-precious stones such as jaspers, crystal and chalcedony, agate, crystals and quartz. Lapis lazuli was obtained from Afghanistan. The discovery of Kharosthi letters on potsherds from the Satanikota is a stong indicator of such a long distance network.

Andhra Coast

The region was known for its outbound trade in the early historic period. It is scattered with several Buddhist sites. Most of them are located in the coastal sector of Andhradesha. The most prominent ones are Salihundam, Gopalpatnam and Peddavegi (Sarkar and Nainar 1972; Singh 2008). Other sites in the northern coastal stip of Visakhapatnam are Thotlakonda, Bavikonda, Pavuralakonda, Dharapalem, Sankaram, Lingarajupalem, Pithapuram, Addurru, Rajamundry, Ramatirtham and Mukhalingam (Fogelin 2006).

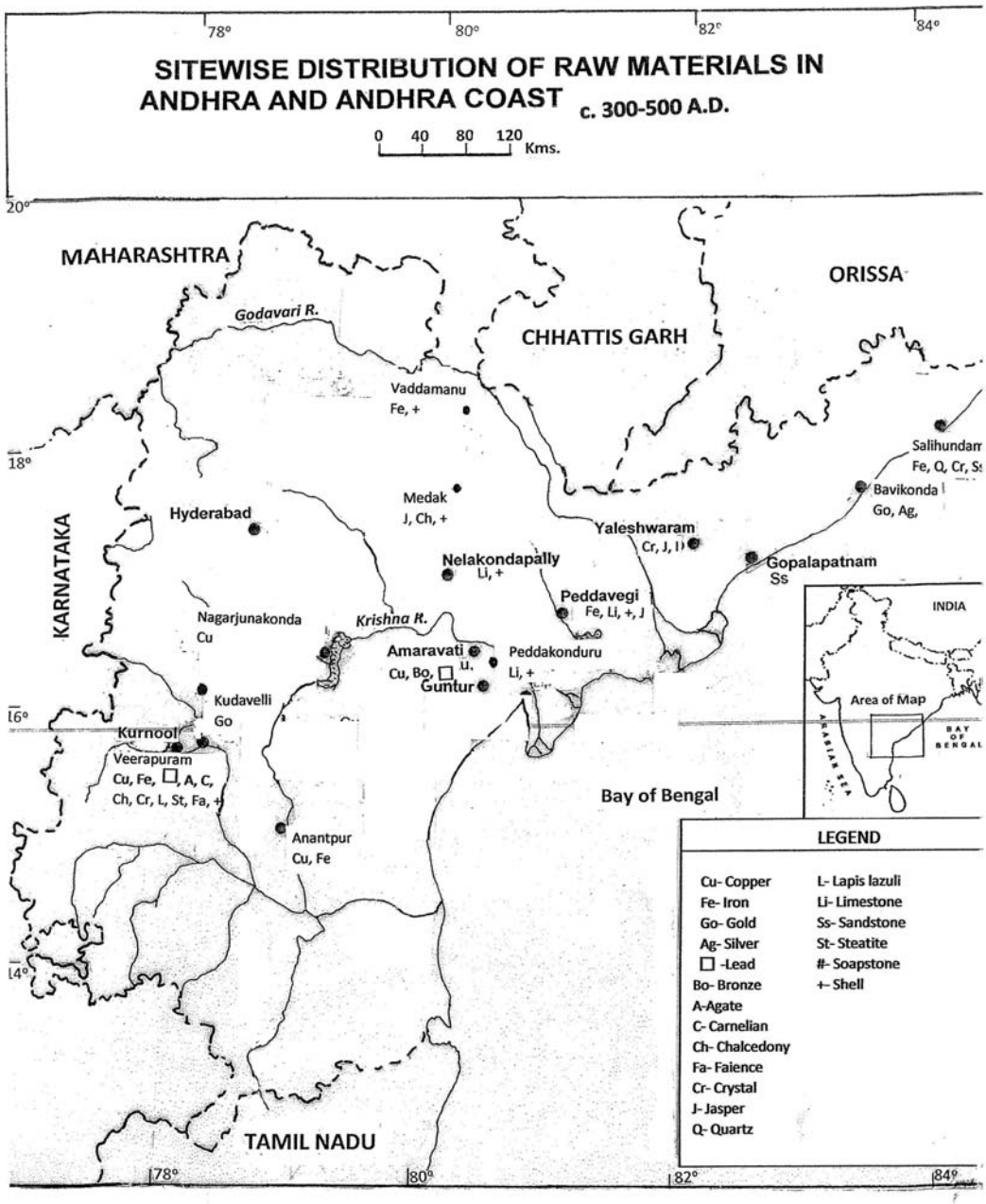
Sitewise Distribution Of Manufactured Objects

The different raw materials used at the site were copper, lead, limestone, sandstone, bone and ivory. These have been elaborated in chart 16b.

Chart 16b
Andhra Coast—c.300---500A.D.

Raw Materials	*Peddavegi*	*Gopalpatnam*	*Bavikonda*	*Sankaram*	*Salihundam*
Copper/Bronze					
Iron	axe, knife, blade, chisel				stylus,knife, blade,bar, arrowhead
Gold			relic casket	coin	
Silver			relic casket		
Lead					
Semi-precious stone		unspecified beads			Quartz, Crystal beads
Ordinary Stone	Limestone pillar parts	Sandstone, plaques			Sandstone image, quern, disc
Steatite/Soapstone					seal
Shell	bangles, beads				
Ivory	dice, combs				

MAP-36


SITEWISE DISTRIBUTION OF RAW MATERIALS IN ANDHRA AND ANDHRA COAST c. 300-500 A.D.
0 40 80 120 Kms.
78°
80°
82°
84°
20°
18°
16°
14°
MAHARASHTRA
ORISSA
CHHATTIS GARH
KARNATAKA
TAMIL NADU
Godavari R.
Krishna R.
Vaddamanu
Fe, +
Medak
J, Ch, +
Hyderabad
Nelakondapally
Li, +
Yaleshwaram
Cr, J, I
Gopalapatnam
Ss
Bavikonda
Go, Ag,
Salihundam
Fe, Q, Cr, S
Peddavegi
Fe, Li, +, J
Peddakonduru
Li, +
Nagarjunakonda
Cu
Amaravati
Cu, Bo, □
Guntur
Kudavelli
Go
Kurnool
Veerapuram
Cu, Fe, □, A, C,
Ch, Cr, L, St, Fa, +
Anantpur
Cu, Fe
Bay of Bengal
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
LEGEND
Cu- Copper
Fe- Iron
Go- Gold
Ag- Silver
□ -Lead
Bo- Bronze
A-Agate
C- Carnelian
Ch- Chalcedony
Fa- Faience
Cr- Crystal
J- Jasper
Q- Quartz
L- Lapis lazuli
Li- Limestone
Ss- Sandstone
St- Steatite
#- Soapstone
+- Shell

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture was seen in this period.

Character of Sites and Distribution of Manufactured Objects

Vengipura called Peddavegi in west Godavari district was the major urban center in this region. It was historically known as Vengi and was the famous ancient capital city of the Salankayana, Vishnukundin and early Chalukyas who ruled the region from third to eleventh century A.D. Extensive ruins of a fortified township at Peddavegi with a moat have been reported.Sandstone structural components, limestone plaques, pillar parts, bricks of Salankayana period and coins of Vishnukundins were recovered from this site (Sarma 1986-7: 15-20; Sarma 2008: 212; Chakrabarti 1997: 238). Dharanikota was a fortified capital of the Satavahanas. Excavations revealed a citadel that was surrounded by a massive mud fortification. Remains of soakpits navigational channels and a huge wharf were seen at the site (Singh 2008: 399). The site has a long chronology from the megalith builders to the late Satavahana period revealing minor antiquities. Structural activity was noted from the beginning of the habitation (Babu 1999:30). Period II of the site revealed a brick rampart that replaced the earlier earthen one (Sarma 2008: 210-11).

Peddavegi has a few iron artifacts in the form of axe, knife, blade and chisel. The use of semi-precious stones is not noticed. Also the use of limestone as plaques and pillars are seen at Peddavegi. Shell, ivory and bone objects such as bangles, beads, combs, dice and points are also seen only at Peddavegi. A carnelian intaglio of the Salankayana period from Vengipura of the fourth-fifth century A.D. is a notable find (Sarma 1986-7: 15-20). Dharanikota yielded from the late Satavahana levels an ivory seal and structural activity (Babu 1999: 30).

The Andhra region is scattered with Buddhist remains in form of stupas, monasteries and *chaityagrihas*. Some of them are Gopalpatnam (Fogelin 2006), Salihundam (Subramanyam 1964), and Jaggyapeta (Babu 1999). Successive excavations have shown a chronological framework from Mauryan times to early medieval. During the third to fifth century A.D. the artifacts found from these sites are lead coins of Ikshvaku rulers. Gopalpatnam in Vishakhapatnam district was a Buddhist site where a

Chatusala type of vihara complex and several votive stupas and cisterns were discovered on a hillock called Bubhikonda. This site yielded stucco figures, sandstone images and semi-precious stone beads of the fourth century A.D. (I.A.R. 1990-91: 2; 1991-2: 3). Salihundam is a Buddhist site and was part of the ancient kingdom of Kalinga The place formed part of the ancient kingdom of Kalinga. During excavations, relic caskets, four stupas, a *chaityagriha*, structural temples and a number of sculptures dating back to about 2nd century B.C. to 12th century A.D were found (Subramanyam 1964: 10). At Jaggayapeta the existence of a stupa and ayaka pillars have been reported of the Ikshvaku period. The stupa survived till the sixth-seventh century A.D. (Babu 1999: 39). At Nelakondapalli, a stupa of burnt bricks is known. Lead coins of Iskhvaku rulers and Vishnukundin rulers, stylus, bowls, pots, beads of semi-precious stone and shell objects stones were found (I.A.R. 1977-8:3; Babu 1999: 47). Gopalpatnam revealed remains of viharas and votive stupas and cisterns. Numerous sculptures were discovered. The site was dated between the first and the fifth century A.D. (Fogelin 2006:104). The opulence of this period is mostly visible in the structural activity in form of reconstruction and decoration of the viharas and stupas.

The urban sites have several structural remains. Artifacts are more in form of sculptures and pillar carvings. Salihundam is one site from where we find a lot of artifacts. Iron artifacts are found in the form of styli, bar, blade, knives and arrowheads. Sandstone querns and steatite seals have also been found. Semiprecious stones beads in quartz and crystal were also recovered.

Also, a number of other stupa sites have been unearthed in the northern coastal region of Andhra. They are Thotlakonda, Bavikonda, Pavuralakonda, Dharapalem, Sankaram, Lingarajupalem, Pithapuram, Addurru, Rajamundry, Ramatirtham, and Mukhalingam in the Visakhapatnam district (Fogelin 2006). The excavation revealed several viharas, chaityas and stupas and other Buddhist remains. Most of the sites flourished between the second-third centuries A.D. Material remains found were a variety of ceramics, Roman and Satavahana coins, roofs, tiles, nails and other building material. In addition, several inscriptions were found at the site (Fogelin 2006: 85). Structural remains such as the refectory at Thotlakonda are noteworthy. It had three store rooms and a dining hall attached to it. A large amount of storage vessels, cooking pots, serving bowls and ash was

found (Fogelin 2006: 89). Bavikonda was another site with Buddhist complexes such as *chaityagrihas* and viharas. Coins of Satavahana rulers and Roman coins were discovered from this site (Prasad 1994: 42).Within the stupa five relic caskets were discovered, several of them made of precious materials. Two of them were silver and gold relic caskets also containing beads of silver, gold, turquoise and coral (Fogelin 2006: 100-01). Pavuralakonda in the nearby hill was another Buddhist site similar in plan to the previous ones. The most notable here are the large number of rock-cut cisterns (Fogelin 2006: 102). Sankaram monastery is noteworthy among the many such sites in the region. The base of the stupas is rock-cut while the superstructure was constructed of brick. A single gold coin of Samudragupta was found here showing that Kalinga formed part of the Gupta empire (Prasad 1994: 7). On the basis of material remains and sculptural styles, the main occupation of the site was dated between the third and the fifith century A.D. Lingarajapalem (1st-5th c.AD) (Fogelin 2006: 104; Prasad 1994:7-8), Rajahmundry (2nd/4th c.- 18th c.A.D) (Fogelin 2006, 105; I.A.R. 1979-80: 1); Ramatirtham (1st-9th c. A.D) (Fogelin 2006: 105), Mukhalingam (1st-9th c.A.D.) (Fogelin 2006:106; I.A.R. 1957-8: 64; 1961-2: 3) were all Buddhist sites.

Raw Materials Available Within The Sub-Region

The presence of sandstone, copper, lead, iron, shell and ivory have already been noted on p. 133 and 134)

Limestone: Enormous deposits are there at Narji, Koilkuntala and Dhone taluk (Rajgopal 1974: 14-15).

Raw Materials Available Outside The Sub-Region

AFGHANISTHAN

Lapis lazuli: The presence has been noted p.31.

The Andhra coastline had the raw materials that were used here. However, given the scanty use of resources in the total number of sites, an elaborate exchange pattern is unlikely. The period from third to fifth century A.D. does not indicate a flourishing stage for the Andhra coastal region. Firstly, there were no evidences of manufacturing activity, secondly there were not too many sites belonging to this period and finally, the artifactual finds from these sites is not impressive.

Karnataka

The region may be divided into the North Karnataka or the Malnad area and the Maidan area and south Karnataka comprising Coorg and Mysore districts (Singh 1971: 791). The post-Satavahana phase saw several dynasties ruling in different parts of the region. The Kadambas were based in Banavasi in north Karnataka; the Ganga dynasty ruled the Mysore region in south Karnataka and flourished in the second half of the fourth century A.D.; the Banas of Kolar district and the Alupas reigned in (Tuluva country) south Kanara (Majumdar 1970 : 268, 270, 274). Some of the excavated sites of this region are Banavasi (Narasimha Murthy 1997), Talakad (Devraj, Murthy and Swamy 1996) and Banahalli in Kolar district (I.A.R. 1983-4: 45-6; 1985-6: 44).

Sitewise Distribution Of Manufactured Objects

The adjoining chart 17b elaborates the raw materials used as follows. Copper, iron, lead, gold, quartz, agate, crystal, chalcedony, beryl, carnelian, amber, amethyst, jade, lapis lazuli, mica, fuschite, serpentine, soapstone, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Layers of period IV of the early historical period at Banahalli, Kolar district revealed a hearth, the contents of which were iron slag and ash (I.A.R. 1983-84:46).

Jewellery Mould: A goldsmith's design mould was discovered at Gudnapur in Uttarkannada district. A solid cast iron bar used by goldsmiths for making ornaments was also found (I.A.R. 1990-91: 32).

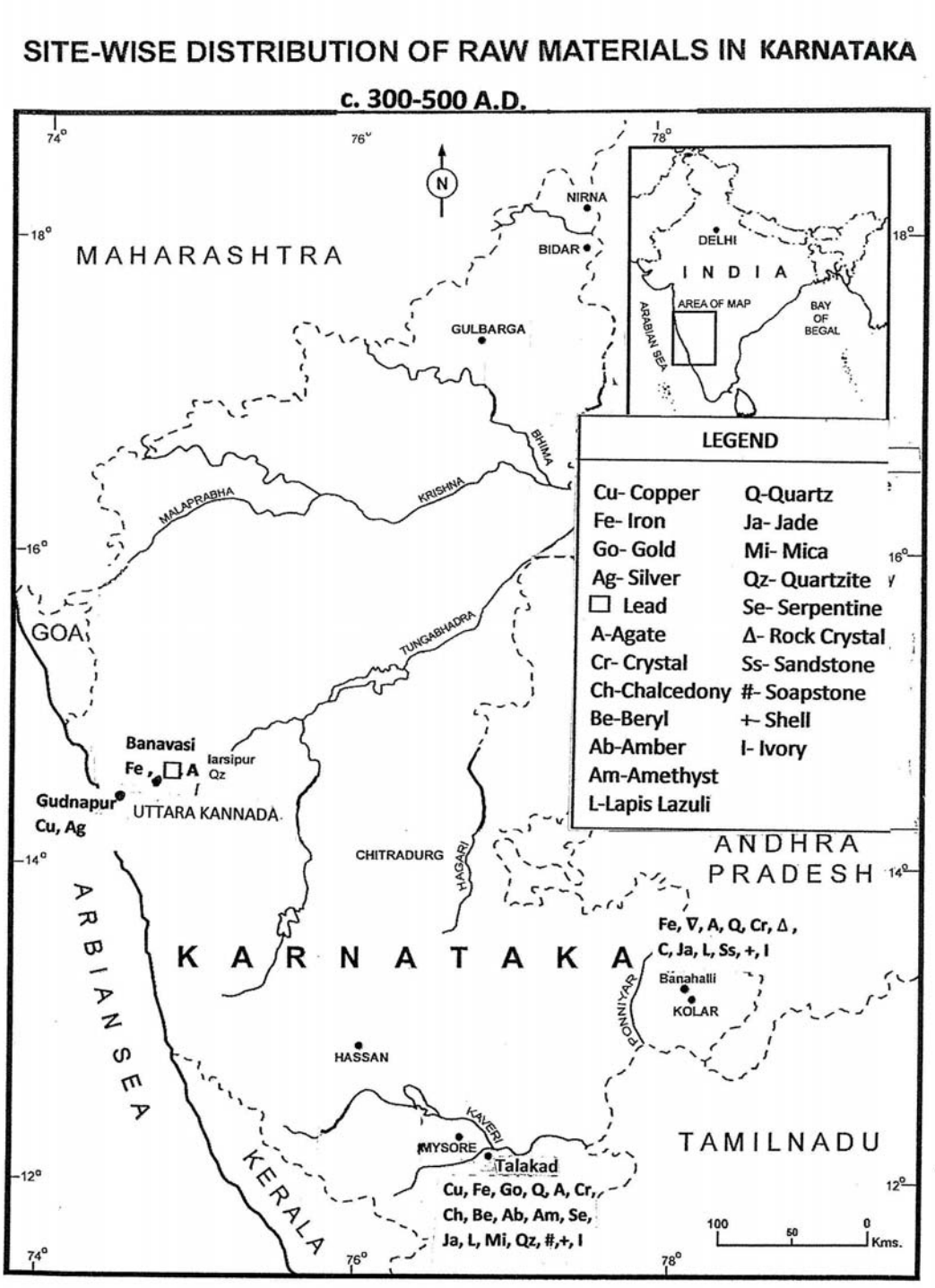
Character of Sites and Distribution of Manufactured Objects

Sites in the region are mostly megalith burials. Amongst them, sites with early historical remains stretching upto late centuries in the Christian era are Banavasi and Talakad. Banavasi or ancient Vijayanti is situated in Sirsi taluk of Uttara Kanara. This site witnessed the political and cultural activities of the Satavahanas, Chutus and early Kadambas. The earliest reference is found in the *Mahabharata* as Vanavasaka. It is rather surprising that not a single coin of the Kadambas was recovered from here even though it was their capital. Banavasi had become a great Buddhist centre with the patronage of Mauryan emperor Ashoka (Murthy 2002: 272). According to Murthy (1997: 110) the cultural accumulation of the periods later than the Mauryan period was mainly gathered

Chart 17b
Karnataka---c.300---500 A.D.

Raw Materials	*Talkad*	*Banavasi*	*Banahalli*	*Gudnapur*
Copper/Bronze	pieces,buttons, rod ,needle, antimony rod			casket
Iron	pieces,ring, clamp, blade,chisel, javelin head, door hinge	piece	dagger,axe, sickle,knife, spearhead slag	
Lead		coins		
Gold	pieces			
Silver				object
Semi-Precious stone	Quartz,Agate beads,Crystal Chalcedony beads,Beryl, Carnelian beads, Amber,Amethyst beads	banded Agate bead	Agate beads, Quartz beads, Crystal beads, Rock-Crystal beads, Carnelian bead	un-specified beads
Jade	beads		beads	
Lapis Lazuli	beads		beads	
Ordinary Stone	Mica chips, Quartzite, Fuchsite beads, Serpentine beads Sandstone pounder			
Steatite/Soapstone	Soapstone beads, reel/spool, sculptures Soapstone Shivalinga			
Shell	beads		beads	
Ivory	beads, comb, pendant		dice	

MAP-37


SITE-WISE DISTRIBUTION OF RAW MATERIALS IN KARNATAKA
c. 300-500 A.D.
MAHARASHTRA
NIRNA
BIDAR
GULBARGA
DELHI
INDIA
AREA OF MAP
ARABIAN SEA
BAY OF BEGAL
BHIMA
KRISHNA
MALAPRABHA
TUNGABHADRA
GOA
Banavasi
Fe, □, A
Iarsipur
Qz
Gudnapur
Cu, Ag
UTTARA KANNADA
CHITRADURG
HAGARI
ANDHRA PRADESH
KARNATAKA
Fe, ∇, A, Q, Cr, Δ,
C, Ja, L, Ss, +, I
Banahalli
KOLAR
PONNIYAR
HASSAN
KAVERI
MYSORE
Talakad
Cu, Fe, Go, Q, A, Cr,
Ch, Be, Ab, Am, Se,
Ja, L, Mi, Qz, #,+, I
TAMILNADU
ARBIAN SEA
KERALA
LEGEND
Cu- Copper
Fe- Iron
Go- Gold
Ag- Silver
□ Lead
A-Agate
Cr- Crystal
Ch-Chalcedony
Be-Beryl
Ab-Amber
Am-Amethyst
L-Lapis Lazuli
Q-Quartz
Ja- Jade
Mi- Mica
Qz- Quartzite
Se- Serpentine
Δ- Rock Crystal
Ss- Sandstone
#- Soapstone
+- Shell
I- Ivory
100
50
0
Kms.

from epigraphs that reflected the political and cultural importance of Banavasi. Excavations revealed a brick fortification of large sized burnt bricks and a moat. Two apsidal structures were revealed that contained a *chaitya* structure (Murthy 1997: 68). Talakad is mostly known as the capital of the Western Ganga dynasty. It is located in the T. Narsipur taluk of Mysore district. Epigraphs of the early period refer this place as Talavanapura (Devaraj, Murthy and Swamy 1996: 2). Talakad comes across as a rich site during the Ganga period. The rule of this dynasty continued upto tenth century A.D. and hence has been covered in the following chapter as well.

Sannathi in Gulbarga district is a well known Buddhist site with four stupas, the most impressive being that of Kanganahalli. Remains of brick fortification and other habitations were revealed. The antiquities were primarily Satavahana coins and other artifacts of the early Christian centuries (Howell 1986-9; Kamalarar 2000:31; Sundara 1990:293). Brahmhagiri and Chandravalli are sufficiently large settlements of the region. The period here is described as 'Andhra culture' and has revealed coins and other antiquities of the Satavahanas upto the third century A.D. (Wheeler 1947:200). Coins of Maharathis, feudatories of the Andhras and Roman coins were found at Chandravalli (ed.Kamalakar 2000: 29). Brahmagiri has yielded 'Andhra culture' remains dated first to the third century A.D. Appearance of rouletted ware and brick *chaitya* was an additional find at this site (Kamalakar 2000: 30). Vadgaon-Madhavpur has brought to light a township of early historic period. The site has produced brick residential structures and terracotta figurines of Satavahana period (Kamalakar 2000: 31). Some of the structures were identified as a soakpit and mettaled road (Sundara 1990: 293). These sites were all Satavahana period sites and nothing beyond the third century A.D. were reported from here.

The copper artifacts are found mostly at Talakad and were different kinds of artifacts as needle, antimony rod and so on. Beside the gold pieces, the variety of semi precious stones used as beads speaks of the material affluence of this region. The raw materials are amethyst, crystal, jade, amber, carnelian and beryl. Banavasi has yielded beads of a variety of semi-precious stones among them is one single banded agate bead. Lapis lazuli as beads is found only at Talakad. Soapstone sculptures, spool and beads are the other artifacts from Talakad. Shell, bone, and ivory beads and combs are the other artifacts from the urban site.

Banahalli in Kolar district is the only other site datable to this period. It has a long history from the neolithic to the early historic levels. The site for the specified period yielded a number of artifacts. Significant among them is the iron slag and ash remains besides implements and weapons as sickle, knife, blade, chisel, dagger and spearhead. A variety of semi-precious stone beads is also found here. They are coral, agate, quartz, crystal, carnelian and jade. Lapis lazuli beads have been recovered from this small site. Shell and ivory beads are the other yields. At Akki Alur, in the Dharwar district forty three late Roman coins of Byzantium of the fifth-sixth century A.D. were reported. The present hoard testifies to the trade relations of Rome with the south in the fifth-sixth century as well (ed. Devraj 1995: 79). Roman coin moulds from Banavasi, Mysore and Kartyal of Bijapur district was also reported (Swamy 2001: 99). At Gudnapur, in Uttarkannada district, two structures of bricks, ceramic industry of red polished ware, a variety of lids, spouts and sprinklers was discovered. A casket with semi-precious stones and gold inlaid stud was found (I.A.R. 1990-91: 32). Rajaghatta in Bangalore district revealed the existence of a brick foundation of Buddhist *chaitya* hall along with numerous votive stupas. A unique feature of these stupas is that, each one of these contains a small clay tablet inside impressed with words of Buddhist creed in the script dated between the fourth and sixth century A.D. A clay medallion having impression of a seated Buddha was also recovered from the votive stupas of this period (I.A.R. 2001-02: 91-2, 95). Buddha images of fifth-sixth centuries A.D. were found at Haigunda in north Kanara district as the Kekaya rulers were patrons of Buddhism and their copper plate reveal grants to Buddhist viharas and Arya sangha in the fifth century A.D. (Sarma and Varaprakasadarao 1993: 111). Bobruwada in north Kanara near Akola has revealed a statue of the Buddha. Other Buddhist images were unearthed in Malaji and Bidarhalli in Sirsi taluk and Bedagaon in Mundagod taluk in north Kanara district (Sarma and Varaprasada Rao 1993: 112).

Raw Materials Available Within The Sub-Region

The availability of gold, copper, iron, lead, soapstone, jasper, amethyst has been given on p.146, and 147.

Semi-Precious stones

Agates are found north of Yanegundi and at Burgapally in Yadgir taluk below the Deccan Trap. Crystal is associated with pegmatite veins in north-south direction on the east of Mangalore schist patch in Shorapur taluk (Sathyan 1966: 22-23). Quartz occurs in the Shimoga district in the form of lenses, veins. Sizable deposits occur near Bhadravati (Karnataka State Gazt: Shimoga district, 1975: 14). Beryl occur Tarur, Kuntegowdanahalli, Irabommanahalli in Sira taluk, Chikunda taluk and Jakkanahalli taluk, A variety of quartz, rock-crystal, and colour occur in the Yadgir taluk in Gulbarga district around Arekere and Ramasamudram, Bellary taluk, Hospet taluk, Harapannahalli taluk in the Bellary district (Sathyan 1966: 22, 23); agates and chalcedony of different shades occur in Bellary district near the Deccan Trap (Radhakrishnan 1996: 209, 194).Chalcedony is known from ultamafic rocks in the fields of Bijapur and common occurrence of green quartzite with mica flakes (fuchsite) in Nuggihalli schist in the Hasan district (Radhakrishnan 1996: 209, 194).

Fuschite

Green chrome mica (fuchsite) bearing quartzite occurs at Belavadi and Yarehalli in the Chikmagalur district (Abhishankar 1981: 13).

Ivory

The forest cover in the Nilgiris in the southern part of Karnataka was possibly accessed for elephants.

Shell and Coral

The Kanara coastline on the west of the region was the nearest source of shells.

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli and jade (Tukestan) has already been noted on p.31.

The above discussion indicates that the Karnataka region has revealed some urban as well as small urban sites from the early Christian century onwards. The cultural material of the period is reflected in the Buddhist remains such as stupas, chaityas and antiquities recovered from them. Talakad and Banavasi come across as the urban settlements given their political importance during the period. There are

several other early historic sites in Karnataka. However, the excavations there do not report anything beyond the Satavahana period dated to the third centuries A.D. Small sites such as Banahalli show a greater variety of resource-use. Iron slag and ash has been noted in this site indicating a possible manufacturing activity in this small site. Gudanur is another site showing evidence of manufacturing activity. The region was mostly utilizing resources from within. These were gold, iron, copper, lead, different varieties of semi-precious stones such as, agate, chalcedony, rock crystal and shell, coral, bone and ivory. The fact that, lapis lazuli beads have been found at Talakad and Banahalli may indicate the existence of long-distance trade carried on with northwest region during this period from this region.

Tamil Nadu

The southern limit of the country on the east was the land of the Cholas and Pandyas in historical times. The Ashokan edicts as well as the early Tamil literature too speak of these kingdoms. The period under study was dominated by the early Pallavas who ruled from Kanchi in north Tamil Nadu. The far south known as Tamilakkam was under political clux after the Sangam Age that came to an end in the third century A.D. Subsequently, the region was ruled by a tribe called the Kalabharas (Majumdar 1970). Some of the excavated sites in the region are Tikkampuliyur, Alagarai, Kaveripattinam, Uraiyur, Perur and Kanchipuram (Mahalingam 1970; Ramachandran 1980; Soundara Rajan 1994; Wheeler 1946, Begley 2004; Ramachandran1980).

Sitewise Distribution Of Manufactured Objects

Chart 18b shows the different raw materials used in the region. They are copper, bronze, brass, iron, gold, carnelian, crystal, amethyst, agate, jasper, aquamarine, steatite, shell and bone.

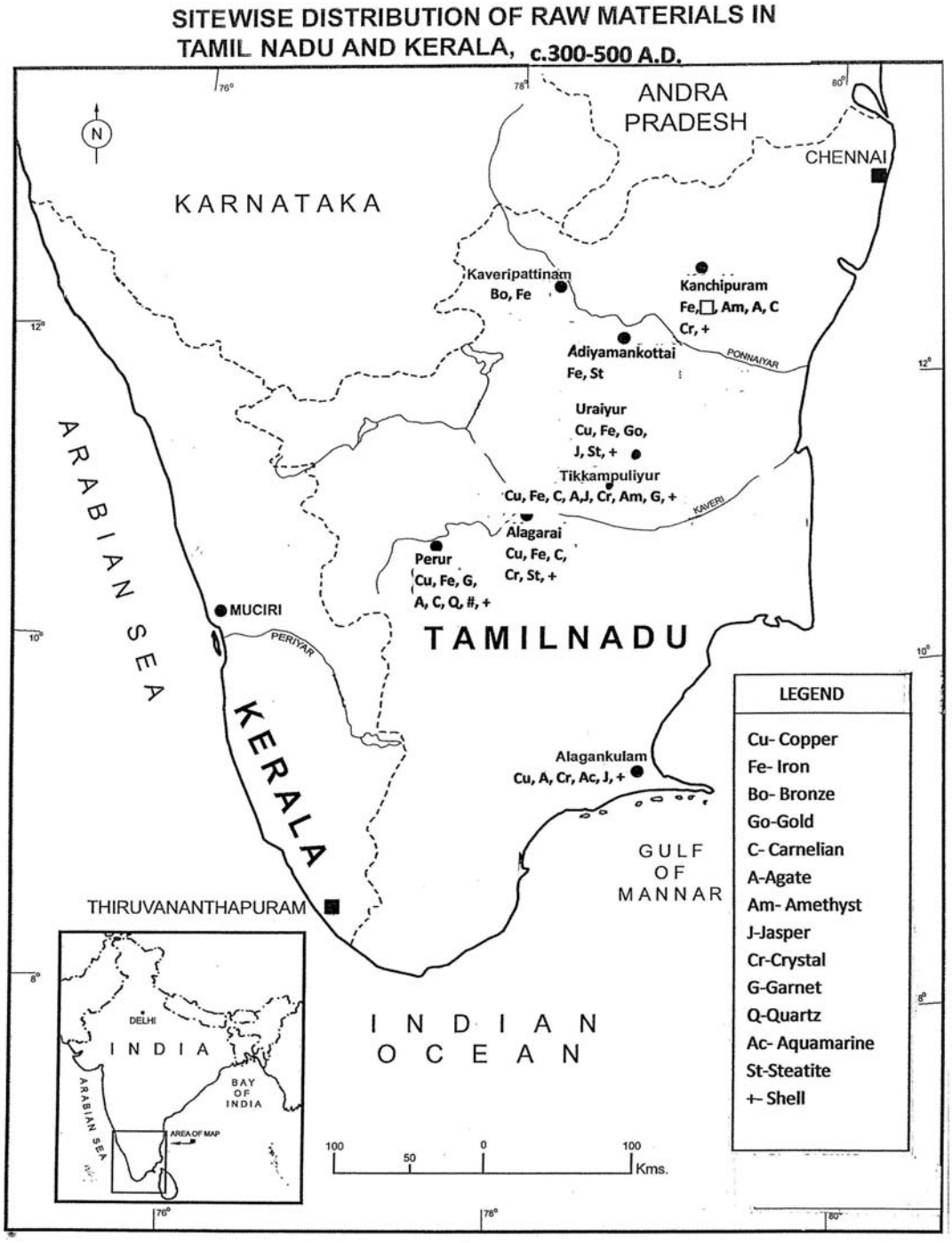
Evidence of Manufacture of Finished Products At Different Sites

Beads: Well shaped but unfinished stone beads and tiny rock crystals were collected from Tikkampuliyur. It leaves us no doubt that bead making was a local industry here (Mahalingam 1970: 51-52).

Chart 18b
Tamil Nadu—c. 300—500 A.D.

Raw Materials	*Tikkampuliyur*	*Alagarai*	*Kaveripattinam*	*Uraiyur*	*Perur*	*Kanchipuram*	*Adiyamanakottai*	*Alagankulam*
Copper/Bronze	bangles,rings, antimony rods, rattle pieces,coins	toe ring, thin rods	Bronze image seal	antimony rods, objects, Brass toe ring	coins			coins
Iron	arrowhead,nail, hook,nut-cracker, nails	knives,daggers, arrowheads	chisel	objects	nails,rings sickles,knives	arrowheads, points	arrowheads,nails,	
Lead						coins		
Gold				pieces of chain	bead			
Semi-Precious stone	Carnelian beads Agate, Jasper beads, Crystal beads, Amethyst, Garnet beads	Carnelian, Crystal beads		Jasper beads Crystal beads	Agate beads, Carnelian, Quartz beads	Amethyst, beads, Agate beads Carnelian beads, Crystal beads	Agate, Crystal, beads, Aquam-arine, Jasper beads	
Steatite/ Soapstone		beads		beads	Soapstone beads		points	
Shell	bangles	bangle pieces, beads		beads, bangles	bangles	bangles	beads	

MAP-38


SITEWISE DISTRIBUTION OF RAW MATERIALS IN TAMIL NADU AND KERALA, c.300-500 A.D.
ANDRA PRADESH
CHENNAI
KARNATAKA
Kaveripattinam
Bo, Fe
Kanchipuram
Fe, □, Am, A, C
Cr, +
Adiyamankottai
Fe, St
PONNAIYAR
Uraiyur
Cu, Fe, Go,
J, St, +
Tikkampuliyur
Cu, Fe, C, A,J, Cr, Am, G, +
KAVERI
Alagarai
Cu, Fe, C,
Cr, St, +
Perur
Cu, Fe, G,
A, C, Q, #, +
MUCIRI
PERIYAR
TAMILNADU
ARABIAN SEA
KERALA
Alagankulam
Cu, A, Cr, Ac, J, +
GULF OF MANNAR
THIRUVANANTHAPURAM
INDIAN OCEAN
DELHI
INDIA
BAY OF INDIA
ARABIAN SEA
AREA OF MAP
100 50 0 100 Kms.
LEGEND
Cu- Copper
Fe- Iron
Bo- Bronze
Go-Gold
C- Carnelian
A-Agate
Am- Amethyst
J-Jasper
Cr-Crystal
G-Garnet
Q-Quartz
Ac- Aquamarine
St-Steatite
+- Shell

Shells: Bangles were found in abundance at Kanchipuram, in various forms; plain, decorated and fragmented, in all stages of manufacture. It indicated that the area was a factory site for manufacture of shell bangles (Ramachandran 1980: 93).

At Tirukkampuliyur, a large quantity of waste shells was found. It indicated a factory site for making shell bangles and beads (Ramachandran 1980: 116).

Character of Sites and Distribution of Manufactured Objects

Some of the urban sites in the period between third to fifth centuries A.D. are Tikkampuliyur, Alagarai, Uraiyur, Kaveripattinam, Arikamedu and Kanchipuram. Kaveripattinam in the Thanjavur district or Puhar was an important port town of the early Cholas in the early centuries A.D. The twin epics *Silppadikaram* and *Manimekalai* of the fifth-sixth century A.D. describe the city as a town inhabited by prosperous people (Soundara Rajan 1994: 8). The site revealed remains from the early historical period commencing from the third century B.C. to the medieval period in the twelfth century. The numerous smaller sites within Kaveripattinam town namely, Kalaiyur, Malaiyur, Vellaiyyaniruppu, Pallavanesvaram, Manigarmam and Radhanallur yielded structural remains and other antiquities. Kilaiyur, Vanagiri produced a massive brick platform and brick structure respectively. A brick-built water reservoir was unearthed at Vanagiri (Ramachandran 1980: 121, 22). At Pallavanesvaram, there are remains of a brick built Buddhist vihara dated to the fourth century A.D. Bronze images of the Buddha in *dhyanamudra* were found here (Ramachandran 1980: 123; Singh 2008: 504). Coin of Sangam Cholas and a bronze seal dated fourth-fifth century A.D. was also found here (Mitchiner 1995: 15). Kanchipuram in Chingleput district was the capital city of the early Pallavas. It revealed a cultural sequence from megalithic period to early medieval times. At Pallavamedu, four structural phases of baked brickes between the second and the fourth century A.D. was found.The remains of votive stupas and other complexes as part of a Buddhist establishment were unearthed here (Ramachandran 1980: 96). Tikkampuliyur in Tiruchirapalli district revealed a chronology from the megalithic period to medieval times (Mahalingam 1970: 15). The antiquities from this site included carinated dishes, globular pots, basins and bowls, terracotta human and animal figurines, iron and copper objects and few copper coins. Manufacture of shell bangles have been reported from third-fourth centuries onwards (Ramachandran 1980: 116). Period II (c.3rd to 10th A.D.) witnessed a

spurt of building activity. The most interesting structure unearthed is a double granary of rooms with two side projections (Ramachandran 2008: 117).

Arikamedu is the famous Indo-Roman trading site on the east coast of the first-second century A.D. It consisted of two walled courtyards associated with tanks. The town was famous as a bead making centre of the early centuries A.D. (Wheeler 1946: 17). The recent excavation report by Vimala Begley (2004: 11-12) noted as phase F dated third to the sixth century A.D., and phase G dated sixth to tenth century A.D. It is stated in the report that based upon the identification of a few fragments of amphorae jars of the period between the third-sixth century A.D. the strata can be dated as such. However, no antiquities have been reported from this phase onwards. Uraiyur in Thiruchirapalli district was the ancient capital of the Sangam Cholas (I.A.R. 1952-6: 26). Evidence of burnt brick structures with two adjoining cisterns were found at Period II dated between second century and fifth century A.D. (Ramachandran 1980: 120). Karur, whose ancient name was Karavur, was a thriving early historic royal centre with extensive trade network with the West. The habitation mound yielded several beads of semi-precious stones, rouletted ware, brick structures, Sangam Chola, Chera and Pandya coins, Roman coins (Mitchiner 1995: 27) and Tamil-Brahmi inscriptions. The site was at its peak from the second century B.C. to third century A.D. (Rajan, Yatheeskumar and Selvakumar 2009: 282).

The resource usage at the urban sites of the Tamil land is substantial. The use of copper is ample. The artifacts are in the form of coins, bangles, rings, antimony rods and toe ring. Brass toe rings and a bronze image at Uariyur and Kaveripattinam are noteworthy. Iron artifacts are not many in number. Some of them are found from the urban sites. These are arrowheads, knives, nails, daggers, hooks and chisels. Lead coins have only been recovered from Kanchipuram. Pieces of a gold chain have been found from Uraiyur.The use of semi-precious stones is seen at Kanchipuram, Tikkampuliyur and Uraiyur. The varieties are carnelian, amethyst agate and garnet beads. Incidentally, shell and steatite artifacts have not been recovered from any urban site.

Several small sites have been identified by K. Rajan in the *Catalogue of Archaeological Sites in Tamil Nadu* (2009). These were mostly megalithic sites that gradually transformed to the early historical period. Few such sites are Nekanurpatti

which reported a Tamil-Brahmi inscription datable to the third-fourth century A.D., Tondur in Gingee taluk where two such Tamil-Brahmi inscriptions of this period are reported (2009: 22). At Panchannavarpadi inscriptions in the Pennaiyar valley were noted on a rock shelter wall having three Jain beds. Another interesting memorial stone is found at Arasalapuram in the Pennaiyar valley. It had a cock figure engraved along with an inscription dated to the fourth- fifth centuries A.D. (Rajan, Yathees Kumar and Selvakumar 2009: 23). Inscriptions have been noted at Pulangkurichi in the Kaveri river valley datable to the fourth-fifth century A.D. (2009: 39). Sittanavayil in the Kaveri river valley produced a habitation cum burial site .This survived for long and is known for an inscription engraved on the walls of a rock shelter datable to fourth-fifth century A.D. (2009: 40).

The other sites in the region are Alagarai, Perur, Adiyamanakottai, Korkai and Alagankulam (Mahalingam 1970; Ramachandran 1980; I.A.R. 1980-1: 65; 1981-2: 63; ed. Magarbandhu and Ramachandran 1991; ed. Sridhar 2004; Sridharan and Raman 2000). Perur in the Coimbatore district revealed a habitation mound together with miniature pots in dull red ware with graffiti marks on them. Other minor antiquities such as shell bangles, beads of semi-precious stones, terracotta beads, lamps, and iron objects alongwith Roman copper coins of Theodosius (c. 379-395 AD) and Constantine (c. 307-337 A.D.) are noted here (Ramachandran 1980: 114; Rajan, Yathees Kumar and Selvaraj 2009: 109). Korkai in the Tamiraparni river valley was the famous port of the Pandyas. Period II is assigned to the third-fourth century A.D. Potsherds with graffiti marks and other antiquities such as conch bangles pieces, beads of shell, terracotta beads and earlobes and bone arrowheads were found. Brick structures superimposed on a ring well were found. Pearl oysters were found in the excavation that testify to the importance of pearl fishery at this site from early historical period (ed. Sridhar 2004: 55-6).An interesting find at Alagankulam was a copper Roman coin of Valentinian I (c. 375 A.D.) alongwith the head of the Roman emperor figure holding a globe (Mitchiner 1995: 17). This was the first Indo-Roman trading site discovered in the Pandyan country that played a significant role in maritime trade of the early centuries of the Christian era (Sridharan and Raman 2000: 66). Pandyan coins were also found here. Indigenous rouletted ware dated first century B.C. has been

recorded here and has been named 'Alagankulam ware' (Sridhar 2005: 82-6). Brick structures, semi-precious stones beads have also been found from Alagankulam (I.A.R. 1990-1: 68, 1996-7: 100). Roman coins of fourth century A.D. have been found at other sites in Tamil Nadu. They are Thanjavur, Mamallapuram and Madurai (Nagaswamy 1991: 247-54; Mitchiner 1995: 13). A number of sites with memorial stones containing *vatteluttu* script of the fourth century A.D. have been identified by Rajan (2000: 24). They are mostly concentrated in the Dharmapuri and Thrivanmalai districts in the taluks of Chengam, Harur, Uttanagarai, Dharmapuri, Krishnagiri, Erode, Karur, Villipuram and Chekkarapatti. These memorial stones contained the names of the Pallava kings and can be assigned to the post-Sangam period (Rajan 2000: 24, 49). A few sites with traces of early historic period habitation designated by ceramics such as red ware and russet coated ware are notable in the Tamil land. Adanur (Dharmapuri district) yielded a habitation cum burial site with pottery such as black and red ware, red ware and red slipped ware and a rare piece of russet coated ware (Rajan 1997: 172) and Kalapatti, Kalasilingapalayam (Coimbatore district) yielded a habitation mound alongwith blac and red ware, russet coated ware, red ware and bowl with graffiti marks (Rajan 1997: 36-7, 62; Narasinhaiah 1980:117). Peruntoluvu in Coimbatore district yielded red slipped ware along habitation mound (Rajan 1997: 72-3). In this regard it might be noted that A.Ghosh (1990: 259) assigned red slipped ware pottery to a time period between the first century B.C. and fifth century A.D. while Narasimhaiah (1980: 178) assigned russet coated painted ware between c.150 B.C. to 3^{rd}-4^{th} c. A.D.

The resource-use at these sites is interesting. Copper and iron artifacts are minimal. Use of semi-precious stones as beads is seen at Alagankulam and Alagarai. Carnelian and crystal beads are found from Alagarai and Perur while at Alagankulam we find a greater variety. Here the different varieties of semi-precious stones are agate, crystal, aquamarine and jasper beads. Steatite beads and points have also been found here. Shell bangles and beads and bone arrowheads are the other artifacts from these sites.

Raw Materials Available Within The Sub-Region

The occurrences of gold, copper, rock-crystal, aquamarine, steatite, iron, shell, have been noted on (p.155 and 156).

Lead

Galena found in Nallamalai's in neighbourhood of old mines at Jangamrazupalle in north Cuddapah (Brackenbury 1915: 17).

Semi-precious stones

Vallam in the western upland region of Tanjore have varieties of rock-crystal, quartz and amethyst (Baliga 1957: 6-7). A variety of jasper occurs in Tirnavalour, Arcot (La Touche 1918: 282-3). The chief sources of stones are amygdaloidal lava flows from the Deccan Trap that cover a major part of the peninsular region of India (Brown 1936: 299). Chalcedony and agates lies within the lining the geods of cellular ferruginous quartz in the Nilgiri hills (Mallet 1887: 71).

Tin

Tin is available at Dambal hills of Dharwar, Kadavur and Umra Karad in Tamil Nadu (Chakrabarti 1992: 113).

Raw Materials Available Outside The Sub-Region

No raw material seems to have been procured from outside.

The period between the third and the fifth century A.D. can be understood as a prosperous one. Manufacturing industries such as bead making was noticed at Tikkampuliyur, Kanchipuram and shell industry at Tikkampuliyur. Also the urban areas displayed a variety of resource-use. The post-Sangam literary works such as epics *Silppadikaram* and *Manimekalai* point to the continuity of trade activities in this period from Kanchi and Kaveripattinam and speak of the affluence of these early historic urban centers (Champaklaxmi 1996:17) .Late Roman coins of fourth-fifth century A.D. too were found at Perur, Thanjavur, Mammallapuram and Madurai .It indicates the continuation of trade activities with the West in this period. The Tamil land was a resource rich region. Most of the resources such as copper, gold, iron, amethysts, jasper, agates, rock-crystal, and shell, bone, lead and tin were locally available. It is ironical that while textual sources point

towards hectic trade activities in the region, material evidence does not indicate any outside contact for procurement of resources.

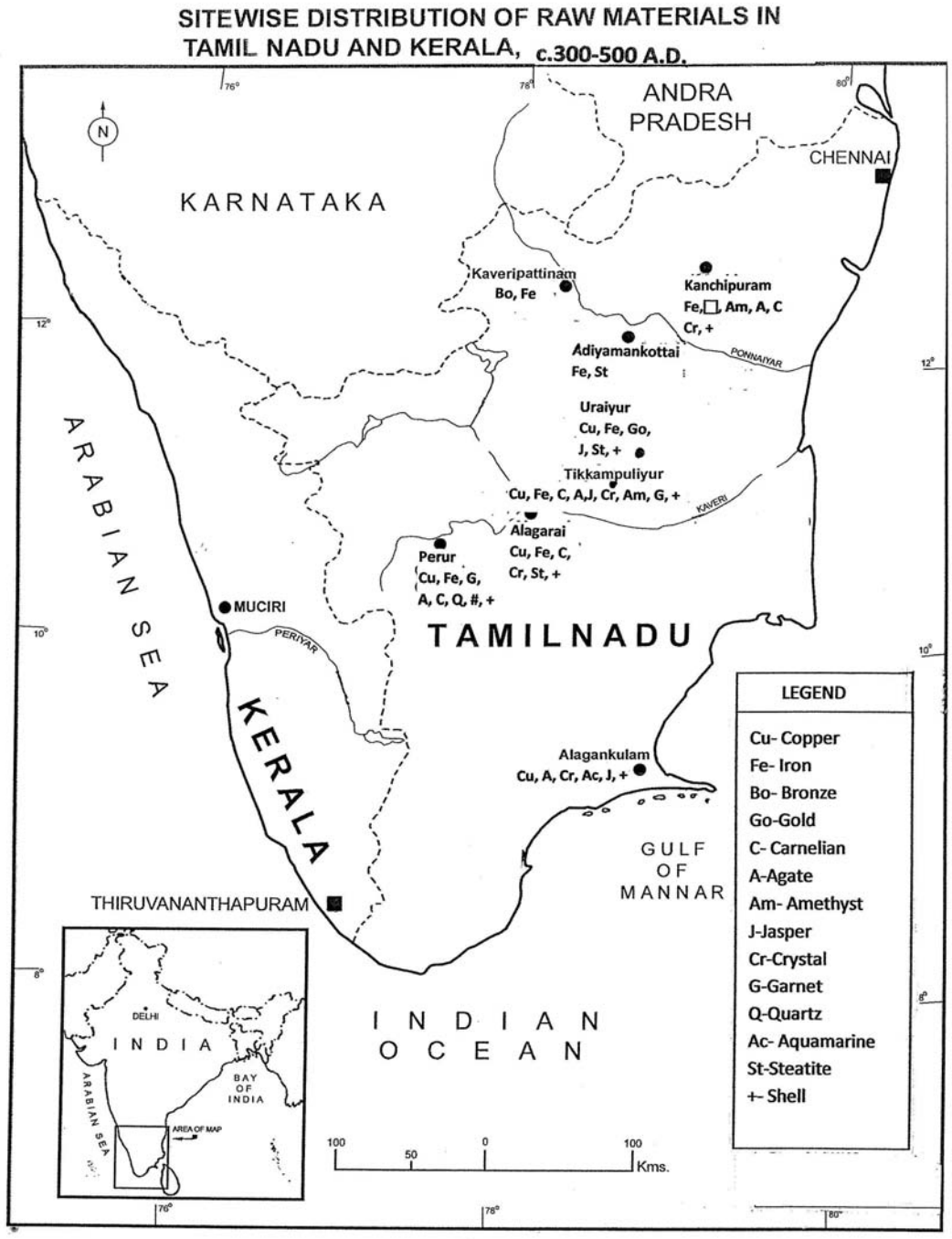
Kerala

The majority of information of this region is from the Sangam literature. The literature elaborates on the three dynasties namely Chera-Chola-Pandya ruling from Vanci, Uraiyur and Madurai respectively. A sizable amount of information is obtained from the Sangam literature regarding the flourishing trade networks of these dynasties. Literature as well archaeology corroborates on the importance of maritime trade of the coastal regions with distant lands particularly Rome in the early centuries A.D. However there is a dearth of such evidence for the period between third and the fifthe centuries AD. We do not have any epigraphic evidence for this period.The Pugalur Inscription gives the names of generations of early Chera rulers who ruled from Karur to Muciri. This inscription also mentions gold merchants from Karur which point towards the importance of trade in this precious metal. However the point made by Nagaswamy (1981: 37) is noteworthy for our discussion. He states that little is known about the Cheras between the third and the eighth century A.D. Kalabharas, an obscure dynasty is known to have invaded the Tamil country in these centuries.

A survey of excavation reports brings forth some archaeological sites of this region. The excavation at the site of Pattanam located five kilometers southeast of Periyar river has revealed a number of artifacts such as pottery, beads, indicating a wide ranging contact during the early historic period (c. 300 B.C. to c.500 A.D.). Nagaswamy has reported Roman coins of the fourth-fifth century A.D. from a few sites like Thanjavur and Madurai and Mamallapuram in the Tamil land. It is noteworthy here that, coins of Roman emperor Theodosius II (c.450 AD) has also been reported from Pudankavur in Kerala (Nagaswamy 1991:247-54). It goes on to strengthen the point that Roman trade continued with both the east and west coast of India in the fourth-fifth centuries of the Christian era. But the absence of the coins suggests that this trade was undertaken by the Arab sea farers as postulated by Shashibhooshan (1987: 39-40).

That this region was a thriving trade centre under the early Cheras is amply evident in literary as well as epigraphic evidences. Trade was also enhanced by the spread of Jainism and Buddhism in this region. The movement of traders and merchants is known from the

MAP-39


SITEWISE DISTRIBUTION OF RAW MATERIALS IN TAMIL NADU AND KERALA, c.300-500 A.D.
ANDRA PRADESH
CHENNAI
KARNATAKA
Kaveripattinam
Bo, Fe
Kanchipuram
Fe, □, Am, A, C
Cr, +
Adiyamankottai
Fe, St
PONNAIYAR
Uraiyur
Cu, Fe, Go,
J, St, +
Tikkampuliyur
Cu, Fe, C, A,J, Cr, Am, G, +
KAVERI
Alagarai
Cu, Fe, C,
Cr, St, +
Perur
Cu, Fe, G,
A, C, Q, #, +
MUCIRI
PERIYAR
TAMILNADU
ARABIAN SEA
KERALA
Alagankulam
Cu, A, Cr, Ac, J, +
GULF OF MANNAR
THIRUVANANTHAPURAM
INDIAN OCEAN
DELHI
INDIA
BAY OF INDIA
ARABIAN SEA
AREA OF MAP
100 50 0 100
Kms.
LEGEND
Cu- Copper
Fe- Iron
Bo- Bronze
Go-Gold
C- Carnelian
A-Agate
Am- Amethyst
J-Jasper
Cr-Crystal
G-Garnet
Q-Quartz
Ac- Aquamarine
St-Steatite
+- Shell

donations made by the mercantile community and ruling class along trade routes. However archaeology seems to fall silent beyond the Sangam Age that came to an end by the third century A.D. Dilip K.Chakrabarti in this light focuses on the dearth of early historical sites in Kerela. He draws our attention to the fact that given the importance of Kerela's coastline in India's maritime trade through ages it is somewhat inconceivable that there are not too many early historical sites in this region (2006: 344-5).

CHAPTER 5

THE POST-GUPTA PERIOD c.500 A.D.—750 A.D.

The decline of the Gupta dynasty a little after the fifth century A.D. triggered a process of political fragmentation in the whole subcontinent. Feudatories and subjugated powers declared their independence and made way for emergence of small kingdoms. It gave rise to a period of rivalry and competition to gain political supremacy. The extent of the kingdoms of early medieval India was flexible and was centered on nuclear areas that became political centres. The different ruling dynasties that gained supremacy after the fall of the Gupta power were the Pushyabhutis of Thanesar, the Maukahris in the Kannauj province, the later Guptas, the Maitrikas of Vallabhi and Sasanka of Bengal (Gauda) and so on. The Deccan and the far South were similarly divided into small kingdoms. The different dynasties that dominated the Deccan and the southernmost states were the Vishnukundins, Kadambas, the Pandyas, Cheras and Cholas. This period has been portrayed by scholars as a period of feudalization of the Indian economy characterized by'decline of trade and commerce'. Several aspects related to the feudal order have been debated by scholars (Yadav 1978-9, Mukhia 1981, Sharma1984, 1987; Chattopadhyaya 1994, 1995). An area-wise study would help us to understand the regional differences in exchange network in the period between the fifth and the eighth century A.D.

Northwestern Region and the Potwar Plateau

Taxila and the entire northwestern region witnessed continued habitation since prehistoric period. In the fifth century A.D. the region was under the White Huns after the fall of the Gupta empire. Cultural material of the post-Gupta period after c.500 A.D. was found at Taxila in the Potwar Plateau and other sites in the NWFP. Other sites are Snaish Gumbat, in the Swat region, Charsadda in the Peshawar valley, Rashakai, in Swabi (Mardan district) and Khrakhpa (Rahman 1993; Ali 1994; Taj Ali 1995).

Sitewise Distribution of Manufactured Objects

Chart 1c shows the different raw materials in the region. These were copper, bronze, iron, and gold, silver, carnelian, and garnet, chalcedony, crystal, pearl and lapis lazuli.

Chart 1c
Potwar Plateau—c.500---750 A.D.

Raw Materials	*Taxila*
Copper/Bronze	trisula,rosettes,bronze fingering
Iron	pickaxe,arrowhead
Gold	beads
Silver	coins
Semi-Precious stones	Carnelian necklace,Garnet beads, Chalcedony,Crystal beads,
Pearl	beads
Lapis Lazuli	beads
Soapstone	seal
Shell	beads

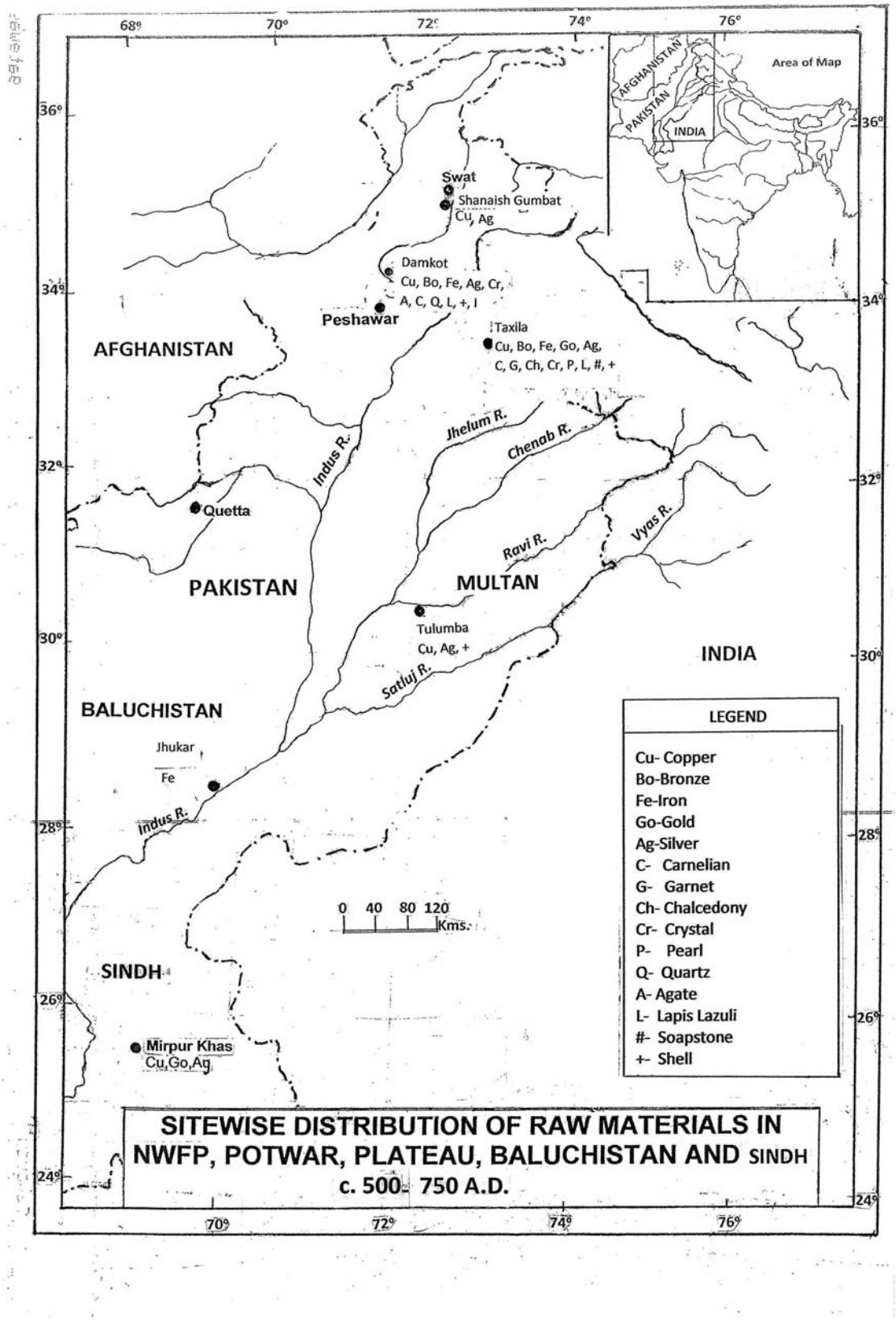
Chart 1c
NWFP- c.500-750 A.D.

Raw Materials	*Damkot*	*Shnaish Gumbat*
Copper	coins , toilet objects, antimony rods,bangles, ear cleaner, hairpin, Bronze fingerring, small bell	coins
Iron	sickle, arroeheads, nails,rings,ladle, fish hook,needle, chisels	
Silver		coins
Semi-Precious stone	Crystal, Agate beads, Carnelian, Quartz beads	
Lapis Lazuli	beads	
Shell	fragment of bangle	
Ivory	small plaque	

Chart 3c
Sindh—Multan c.500---750 A.D.

Raw Materials	*Jhukar*	*Tulumba*	*Mirpur Khas*
Copper/Bronze		coins	coins
Iron	knives, daggers, chisels, spearhead, scythes		
Gold			case, leaf
Silver		coins	case
Shell/Conch		bangles, beads	

MAP-40


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Swat
Shanaish Gumbat
Cu, Ag
Damkot
Cu, Bo, Fe, Ag, Cr,
A, C, Q, L, +, I
Peshawar
Taxila
Cu, Bo, Fe, Go, Ag,
C, G, Ch, Cr, P, L, #, +
AFGHANISTAN
Jhelum R.
Chenab R.
Indus R.
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tulumba
Cu, Ag, +
INDIA
Satluj R.
BALUCHISTAN
Jhukar
Fe
Indus R.
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Ag
LEGEND
Cu- Copper
Bo-Bronze
Fe-Iron
Go-Gold
Ag-Silver
C- Carnelian
G- Garnet
Ch- Chalcedony
Cr- Crystal
P- Pearl
Q- Quartz
A- Agate
L- Lapis Lazuli
#- Soapstone
+- Shell
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c. 500- 750 A.D.

Evidence of Manufacture of Finished Products At Different Sites

Blacksmith's workshop: At Damkot, one of the upper floors of the structural remains was marked by a smith's workshop. The tools and implements were found in association with an open mouthed bowl probably for keeping water for cooling down metal objects after being heated and hammered. A small furnace was found nearby. The workshop is assigned to period V of the Hindu Shahi period of early eighth century A.D. (Rahman: 1968-69: 135).

Character of Sites and Distribution of Manufactured Objects

Taxila was a much renowned city of the historical period. The city was an ancient centre of learning and a seat of political power. The region was under the rule of Mauryas, Saka-Pahlawas, Indo-Scythians, Kushanas, Sassanians, Kidara Kushanas and the Huns. It is represented by three mounds Bhir, Sirsap and Sirsukh. The last city was established at Sirsukh by the Kushana rulers. There are several religious sites scattered within the region with Buddhist remains that flourished between the second and the fifth centuries A.D.

Huien Tsang tells us that about seventh century A.D. there were a thousand monasteries in Gandhara alone. The structural remains of a majority of the monasteries were in ruins and in desolate state (Marshall 1951: 5, 76). The presence of the Huns is also confirmed by their silver coins prior to the rule of Toramana or Mihirkula from the burnt out monasteries at Taxila (Marshall 1951: 76). Marshall reports that the evidence of the vandalism of the White Huns was there in the form of the wreckage of monasteries and stupas and skeletons of the slaughtered lying in the debris. The destruction of the *sangharamas* has been described by Huien Tsang in his account. In the eighth century, Taxila was included among the feudatories of the Kashmir dynasty (Marshall 1960: 39).

There are a few other religious sites of this period in the northwest, majority of them are associated with Buddhism. At Damkot near Charsada the remains of an earlier stupa was found devastated and ruined dated to the sixth century A.D. The place was possibly abandoned in the days of the White Huns. On the stupa site a thick layer of accumulated debris were deposited. The only find from the debris was that of two

coins of the Hindu Shahi rulers (Rahman 1968-69: 110), 119. At Snaish Gumbat in the Swat region, several coins of the Hindu Shahi period of sixth-seventh century have been found. The debris of the stupa that existed in the Kushana period revealed late Kushana copper coins as well as those of the Hindu Shahi rulers. One silver coin has been recorded, while the rest of them are of copper (Rahman 1993: 42). The bulk of the sculptures from this debris belonged to the post-abandonment period. Rock carvings are known from the site at Dir. These carvings fall in 6^{th}-7^{th} c. A.D. and thus bear out the chief evidence that Gandhara art did not come to an end in the fifth century by the so-called destruction of the White Huns. It continued and evolved new forms until it merged with the art of the Hindu Shahis (Dani, 1968-9: 251). In the Peshawar valley, Charsadda is one of the noted historic sites. The region flourished under the Kushanas; however, it suffered greatly at the time of the Huna invasions. This is reflected in the seventh century A.D. accounts of Huein Tsang (Beal 1884). It has several Buddhist sites dated between the first to the eighth century A.D. It has been designated as the Kushana-Hindu Shahi period (Ali 1994: 95). Ali has observed that there is a great decline in the settlement after the fifth century A.D. This might be because of the disruptions caused by the Huna invasions (Ali 1994: 95). At Shah-ji-ki-Dheri two stupas had carvings on them. Towers were later additions. Sculptures in the form of small terracotta and stucco heads were assigned to this period. Huien Tsang has also reported such finds in his accounts (Hargreaves 1910-11: 27). At Shahri-Bahlol, Aurel Stein (1911-12: 101) has noted the desolate ruins of Buddhist shrines. He also points to the continued use of these shrines for Hindu worship that replaced the Buddhist cult. This continued down to the tenth century A.D. This is proved by the coins of the Hindu Shahis as well as sculptural fragments that are remarkably Hindu. One of them in white marble was a figure of Goddess Laxmi. The shrines yielded coins of Kushanas, little Kushanas but none of the White Huns. This possibly indicates the total desertion of the site (Stein 1911-12: 101, 109). Kashmir-Smast in the NWFP was the only cave temple in the Mardan district. From the masonry and inscription of the Gupta period, the temple could be dated to later half of fifth- sixth century A.D. (Dani 1988: 82). Rashakai, in Swabi (Mardan district) is a Buddhist site and has revealed an enclosure built of diaper masonry. The pieces of art recovered from here suggest that the site was occupied in the sixth century A.D. (Taj Ali 1995:

103). Khrakhpa in Swabi area is a Buddhist site dated to the fifth- sixth century A.D. where broken pieces of Gandhara sculptures of Buddha have been found (Taj Ali 1995: 105). Despite the savagery of the Huns in the fifth century A.D, Huien Tsang who passed in this region in c.629-645 A.D. had recorded the existence of some thousand of Buddhist monasteries that he came across (Barger and Wright 1985: 41).

The resource usage in this period in Taxila is wide-ranging. Copper, bronze and iron has been used in artifacts such as coins, rosettes, *trisula* and finger ring, pickaxe and arrowhead respectively. Gold beads and silver coins are other artifacts of precious metals. The use of semi-precious stones is mainly as beads but the diversity is notable. The different stones are crystal, chalcedony, carnelian, and garnet. Pearl and lapis lazuli beads are also found. Shell is used as beads.

Raw Materials Available Within The Sub-Region

The presence of copper, gold, iron and agate and chalcedony is noted on p. 26 and 27.

Garnets

The presence of garnets has been noted on p.168.

NWFP.

Raw Materials Available Outside The Sub-Region

The availability of pearls (Tamil Nadu) lapis lazuli (Afghanistan) has been noted on p. 31.

Epigraphic, Numismatic and Literary Linkages

The White Huns consolidated their rule in Bactria by the early fifth century A.D. They extended their sway over Kabul valley and then conquered northern Pakistan and ousted the Kidara Kushanas in c.460 A.D. Till c. 530 A.D. the Huns under Mihirkula were the ultimate rulers of the region of Taxila and NWFP (Ancient Pakistan, no.4, 1968-69: 46). The Eran Stone Pillar inscription of Bhanugupta dated to the sixth century A.D. indicates that the Toramana and Huns held sway over Gwalior, Punjab, and Kashmir and added much of Rajasthan and Malwa to their empire (Bhandarkar 1981: 352). This indicated a wide area of influence under the White Huns.

The contact between the NWFP and Taxila with the southern portion of the subcontinent has already been discussed on p. 13-14.

The occupational layers in the post-Gupta period as compared to the earlier periods were not wide in this region. The artifactual yield from the site was moderate. The variety of resource-use is most profound in semi-precious stones. A few resources such as gold, copper, iron and agate and chalcedony varieties of semi-precious stones and garnets were obtained from within the region. Pearls were most likely procured from the far south and lapis lazuli from Afghanistan respectively. No manufacturing activity was reported in this period from the region.

Taxila and NWFP in the post-Gupta period were represented more by the remains in form of architectural ruins than artifactual yield. It indicated a moderate sized habitation in this period. Marshall (1960: 39) opines that the evidence of vandalism and destruction by the Huna rulers possibly rendered a death blow to the affluence of this region from which the prosperous city of Taxila could never recover.

On the basis of our study of resource usage it might be understood that the NWFP was dependent on the neighbouring regions for procurement of few resources. Pearls were possibly procured from south and this contact was in existence since ancient times. The contemporary accounts of Fa-Heisn and Huien Tsang establish the fact that the southern region was accessed for this gem in the seventh-eighth centuries as well.

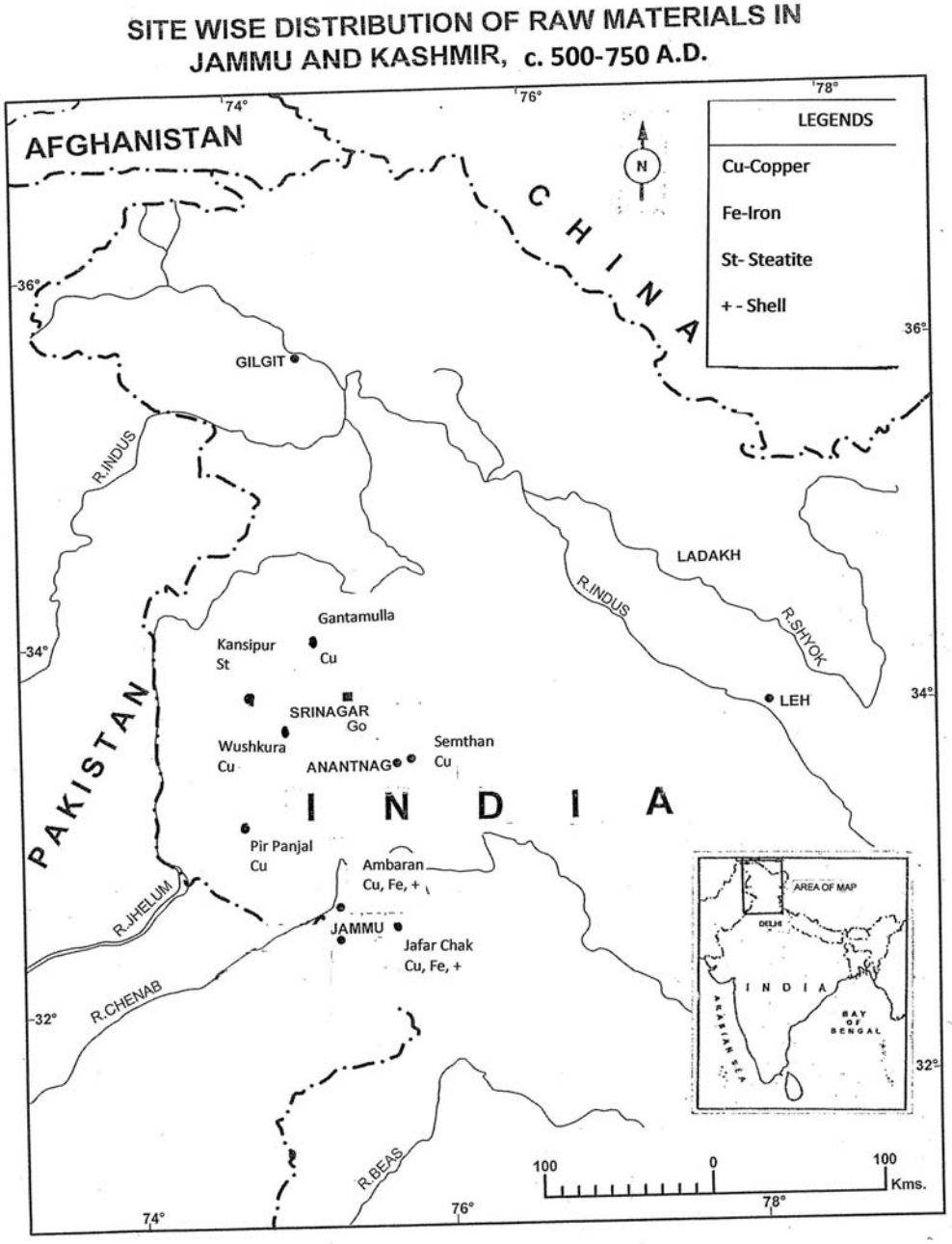
Jammu and Kashmir

The post-Gupta period is marked by the invasion of the Hunas based in the Gandhara region. The Rajatarangini of Kalhana gives a list of kings but none other than Mihirkula, the Huna (6^{th} c. A.D.) described as *Mlecchas* is important in this period (Chakrabarti 1984: 114). The chronicle also mentions that Kashmir came under the rule of Harshvardhana of Ujjain who ruled in the first half of the sixth century A.D. (Sodh 2006: 55). This has not been substantiated by other sources. Following the rule of the Kushanas, the period post sixth century A.D. was ruled by the Kidara Kushanaas followed by the Karkota dynasty (600-855 c. A.D). This period witnessed unprecedented surge in production of sculptures and building activities mostly in

Chart 2c
Jammu and Kashmir—c.500—750 A.D.

Raw Materials	*Gantamulla*	*Wushkura*	*Jafar Chak*	*Ambaran*	*Semthan*	*Pir Panjal*	*Kansipur*
Copper/Bronze	coins	coin	objects	coins,objects	coins	coins coin	
Iron			objects	nails, hooks, rings			
Steatite							bead
Ordinary Stone							grinder, dice
Shell			bangle	pieces			

MAP-41


SITE WISE DISTRIBUTION OF RAW MATERIALS IN JAMMU AND KASHMIR, c. 500-750 A.D.
LEGENDS
Cu-Copper
Fe-Iron
St- Steatite
+ - Shell
AFGHANISTAN
CHINA
PAKISTAN
INDIA
GILGIT
R.INDUS
LADAKH
R.SHYOK
LEH
Gantamulla
Kansipur
St
Cu
SRINAGAR
Go
Wushkura
Cu
ANANTNAG
Semthan
Cu
Pir Panjal
Cu
Ambaran
Cu, Fe, +
JAMMU
Jafar Chak
Cu, Fe, +
R.JHELUM
R.CHENAB
R.BEAS
AREA OF MAP
DELHI
INDIA
ARABIAN SEA
BAY OF BENGAL
100
0
100
Kms.
74°
76°
78°
36°
34°
32°

stone. Buddhist remains like the tooth-relic *stupa* and monastery is mentioned by the Chinese pilgrim Huien Tsang who visited Kashmir in 631 A.D. (Shali 1993:148-4 9). The few sites where post-Gupta period artifacts have been reported are Semthan, Wushkura, Jafar Chak, Ghantamulla and Ambaran (ed. Pande and Chattopadhyaya 1987; IAR 1977-78: 79; 1998-99: 49 IAR 1999-2000: 58-63).

Sitewise Distribution of Manufactured Objects

Chart 2c shows the different raw materials used in the region. These were copper, iron and shell.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been noted here.

Character of Sites and Distribution of Manufactured Objects

Semthan was an urban settlement of the Kushana period and earlier. In the post-Gupta period excavations exposed a circular road around the township of this period. As stated by Pande and Chattopadhyaya (1987: 335), this was a period of affluence and corresponds to the rule of the Hindu rule in region namely, the Karkota, Utpala and Lohara dynasty. According to Chinese annals it is reported that a king named Tu-lo-pa controlled the route from Kipin to Kashmir between 627-49 A.D. Tu-lo-pa is identified as Dulabhvardhana of Karkota dynasty (Sodhi 2006: 75).

Ambaran in Jammu district was the famous site from where terracotta Buddhist heads were recovered. A large monastic complex dated to the sixth-seventh centuries A.D. was revealed near Akhnur and survived till the seventh century A.D. The site was abandoned after that period (IAR 1999-2000: 61). Huna copper coins have been recovered from Ambaran (Mani 2000-01:56). The site had a well established Kushana and post Kushana phase. Subsequently, the post-Gupta phase assigned to sixth-seventh centuries A.D. also showed signs of habitation. Excavations revealed that the monastery located in a large complex had survived in this period too. A lot of additions, alterations and repairs were seen. Walls with only one or two courses of brickbats could be found. Base of a brick pillar, supporting walls, partitions in the structures and the other architectural remains found. Terracotta figurines and gamesmen were found here (Mani 2004: 398). Pandrethan,

another site with Buddhist remains has come to light and was in use as late as seventh century A.D. when Huien Tsang visited the place in 629-45 A.D. The old name was Puranadhisthana. The stupa remains had only a dressed stone wall. A few fragmentary sculptures probably belonging to the seventh century have also been found .The sculptures included life size image of a *Bodhisattva*, sculptures of *Ashta-Matrikas* and a carved stone capital (Kak 1971 reprint: 115-116). At Kansipur, in Baramulla district, the last occupational period of the mound yielded pottery of red ware and copper coin of Kashmir dynasty series with the name Bhimagupta was found. Terracotta sling balls and animal figurines were the other finds. No other structures were found (Mani 1999-2000: 17).

A few religious sites in the region are Gantamulla, Wushkura and Jafar Chak. Gantamulla and Wushkura in the Baramulla district were under the Hunas and coins of Toramana (5^{th}-6^{th} c. A.D.) have been found here. An ancient stupa was revealed in excavations at Wushkura. A part of the plinth of an earlier *stupa* laid on rammed clay bed was also found (IAR 1968-9: 59; 1977-8:79).

Along the Pir Panjal route archaeological evidence related to Huna king Mihirkula has been discovered. A copper coin hoard of Huna rulers is found from the Pir Panjal pass. These coins had writing in classical Brahmi characters and contained names of the Huna rulers (Ahmed 2007: 173).

The objects we find at all the sites are coins of copper. The other artifacts are iron objects in form of nails, hooks and rings from Jafar Chak and Ambaran and shell bangle pieces. A steatite bead has been found from Kansipur.

Raw Materials Available Within The Sub-Region

The presence of copper and iron are noted on p.37.

Steatite: An occurrence of soapstone is reported from Chilhana Da Dana in the Muzaffarabad District but provided no details regarding it. The descriptions of steatite at Nagri and, especially, at Chinchora in the Doda District give the impression that good quality material might be found at those locations (Law II 2011: 205-7).

Soapstone

In the Kotli District, soapstone deposits in dolomitic rock are reported at Palana and Nawal. In the Zanskar area of Ladakh, "pockets of talc" are reported in ultramafic rock (Varadan 1977: 63).

Raw Materials Available Outside the Sub-Region

SINDH

Shells

Shells are available along the Sindh coastline.

Epigraphic, Numismatic and Literary Linkages

The Huns moved into India from the Oxus region in the fifth century A.D., and conquered several regions of the Gupta empire and beyond. They occupied Gandhara and conquered west India as far as Malwa. As a corroboration of this fact, Huna coins have been recovered from eastern Punjab, Rajasthan and Kashmir (Gupta 1969: 59). Taranatha in his *History of Buddhism* in India refers to Mihirkula as 'Hunimanta'. Cousens (1929: 6-7) also notes that around the sixth century A.D. the region of Sindh was under the White Huns. Mounds of Jhukar near Larkana in Sindh, coins of White Huns have been found along with Gupta inscriptions (Ghosh 1999: 7).

The survey revealed several sculptures and Buddhist remains in Jammu and Kashmir from the sixth century A.D. onwards. The artifactual yields in the post-Gupta period were limited. 'Urban' sites such as Ambaran and Semthan mostly produced Huna coins and Buddhist remains. The evidence possibly indicates towards the fact that despite the destruction of Buddhist remains by the Huna king Mihirkula, some vestiges of the creed continued till the seventh century. No manufacturing activity was noticed for this period. The raw materials used were copper and iron and steatite which were locally available. Shells were probably procured from the Sindh coastline. The sites were probably abandoned after the seventh century A.D.

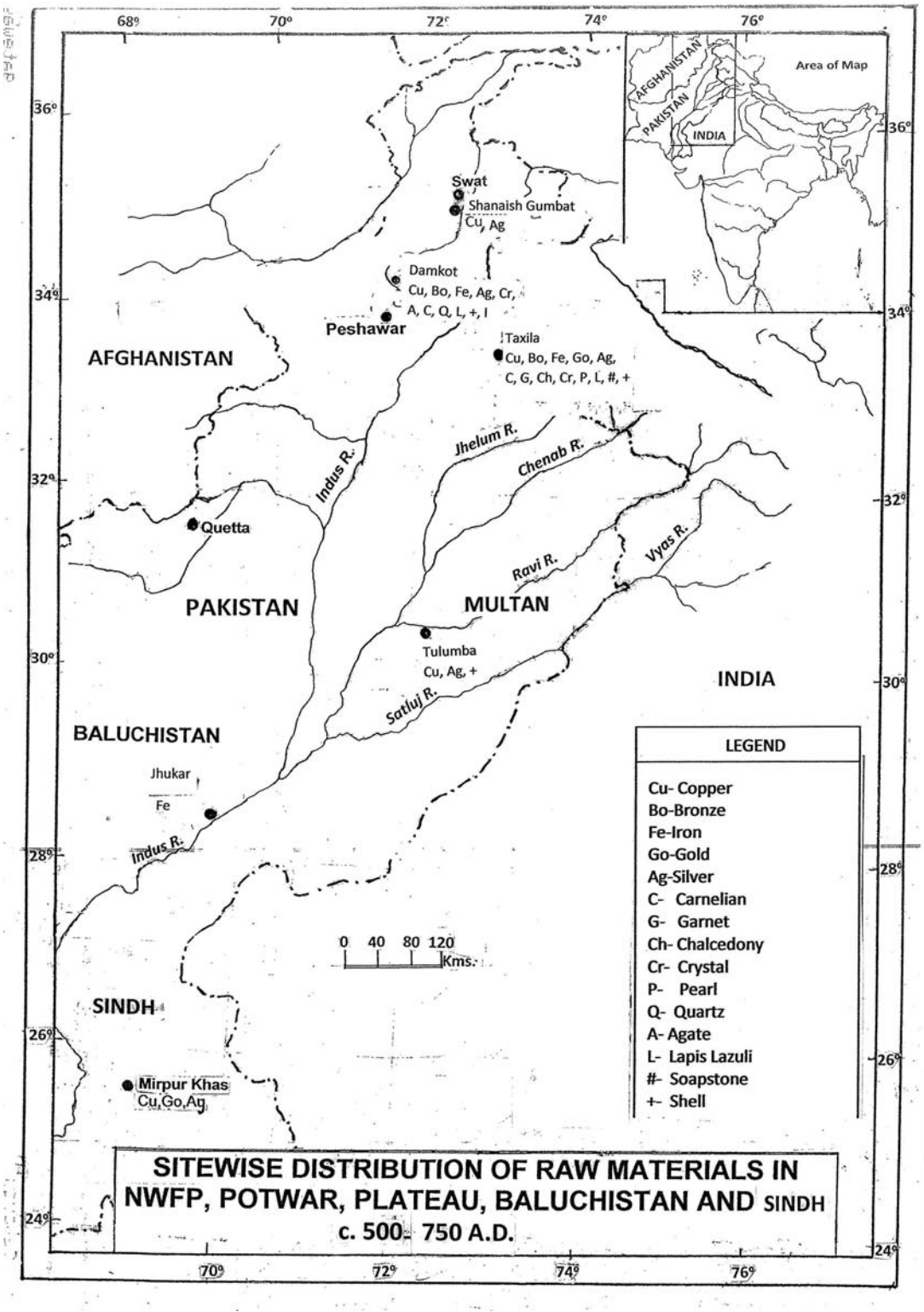
Sindh-Baluchistan-Multan

The Sindh province lies in the Lower Indus basin while Multan lies in the southern portion of the Punjab province. The region witnessed the rule of various foreign

Chart 3 c
Sindh-Multan c.500-750 A.D.

Raw Materials	*Jhukar*	*Tulumba*
Copper/Bronze		objects, bangles, coins
Iron	spears, knives, daggers, chisels, scythes	
Silver		coins
Shell		beads

MAP-42


68°
70°
72°
74°
76°
36°
34°
32°
30°
28°
26°
24°
Area of Map
AFGHANISTAN
PAKISTAN
INDIA
Swat
Shanaish Gumbat
Cu, Ag
Damkot
Cu, Bo, Fe, Ag, Cr,
A, C, Q, L, +, I
Peshawar
Taxila
Cu, Bo, Fe, Go, Ag,
C, G, Ch, Cr, P, L, #, +
AFGHANISTAN
Indus R.
Jhelum R.
Chenab R.
Quetta
Ravi R.
Vyas R.
PAKISTAN
MULTAN
Tulumba
Cu, Ag, +
Satluj R.
INDIA
BALUCHISTAN
Jhukar
Fe
Indus R.
0 40 80 120
Kms.
SINDH
Mirpur Khas
Cu,Go,Ag
LEGEND
Cu- Copper
Bo-Bronze
Fe-Iron
Go-Gold
Ag-Silver
C- Carnelian
G- Garnet
Ch- Chalcedony
Cr- Crystal
P- Pearl
Q- Quartz
A- Agate
L- Lapis Lazuli
#- Soapstone
+- Shell
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
NWFP, POTWAR, PLATEAU, BALUCHISTAN AND SINDH
c. 500- 750 A.D.

powers such as the Indo-Greeks, Saka-Pahalawas, the Scythians and Kushanas. It appears that Sindh remained under the influence of Iran as a Sassanian satrap till the rise of the local Rai dynasty. In the sixth century A.D. the region came under the rule of the Huns. The Kura Stone Inscription of Toramana Shahi was found in the Salt Range of Punjab in West Pakistan and is proof of the Huna rule in the region (Dani 1988: 89). The different sites of the region with post-Gupta occupational layers are Jhukar, Mirpur KhasThul Rukan near Moro, Depar Ghangro near Brahmanabad, Tando Muhammed Khan and Jherrick in Sindh (Cousens 1929; 1909-10) and Tulumba in Multan (Mughal 1967: 21-151). Huien Tsang describes Sindh as a region that is abundant in gold, silver and native copper. Also several stupas and *sanghas* like Jhukar, Mirpur Khas have been reported by him. Similarly he described Multan or Mulastana as thickly populated in the seventh century A.D. Offerings of gems were made by the kings and high families to the 'Gods' (Beal 2001: 272; 274).

Sitewise Distribution of Manufactured Objects

The chart 3c shows the different raw materials in the region. These were copper, iron, silver and shell.

Evidence of Manufacture of Finished Products At Different Sites

Chert: A polisher of chert for polishing jewels was found from Jhukar in Larkana, Sindh. A large number of chert flakes and cores were also found. They have been dated to the Indo-Sassanian period (Ghosh 1999: 11).

Character of Sites and Distribution of Manufactured Objects

In the sixth century A.D., Makran was at first, part of the domain of the Hindu Rais of Sindh. Huien Tsang describes the region as predominantly Buddhist, though thinly populated (Dani 1988:89). The construction of the caves of Gondrani near ancient ruins of the town Las Bela is essentially Buddhist (Panjwani and Mansukhani 2002: 92). At Mirpur Khas, a Buddhist site in Sindh, many tablets are found that have elongated stupa on them instead of the image of the Buddha arranged in rows. The inscriptions were in the characters of the seventh-eighth centuries A.D. Along with these tablets were found copper coins bearing Arab inscriptions. It is postulated by Cousens (1909-10: 88) that the worship at the stupa continued until the Arab invasions in c. 715 A.D. Huien Tsang in the

seventh century has recorded that there were several hundred *sangharamas* in Sindh; occupied by ten thousand priests and that they studied the little vehicle (Cousens 1909-10: 89). Other stupas of this period are, Thul Rukan near Moro, Depar Ghangro near Brahmanabad, Tando Muhammed Khan and Jherrick seem to have been built at the same time in the early centuries AD and continued up to this period. Sawandi, a great Buddhist establishment, is mentioned in literary sources as being built by the King of Kashmir (Cousens 1929: 105). Chach, author of the *Chachnama* in the seventh century A.D. visited Brahmanabad and commented on the state of ruins of the temple (stupa?) (Cousens 1909-10: 92).Cunningham found moulded carved bricks at Thul Rukan and Shorkot in northeast Multan (Cousens 1909-10: 91-92). Tulumba, an urban site in the Multan region was a well founded city in the Indo-Greek period in the late centuries B.C. and early centuries A.D. and its Buddhist association continued in this period as well.

The objects yielded from the region in the specified period are shell bangles at Tulumba. Jhukar in the Sindh province yielded some iron artifacts such as spears, knives, daggers, chisels and scythes.

Raw Materials Available Within The Sub-Region

Chert: Lahiri (1992: 28) has noted chert deposits among the limestone terraces south of Rohri in Upper Sindh. These deposits have been noted at Sukkur and in the west-northwest of Kotri and another variety of chert are found throughout Sindh-Kohistan. She further notes that these were initially noted by W.T. Blanford.

Copper and Iron

Occurrences in the Baluchistan region have been previously noted on p.44-45.

Shell

This is amply available from the Sindh-Baluchistan coastline.

Raw Materials Available Outside The Sub-Region

No raw material seems to have been procured from outside the region.

The Sindh-Multan region in the post-Gupta period was much restrained in spread. We come across few sites with cultural material of the period. However, there are quite a

few sites that continued from the earlier periods. This was confined to the Buddhist sites like Manikyala, Mirpur Khas and so on. Working on chert as part of manufacturing activity is noticed in this period at Jhukar and the raw material was locally available. Resource-use was limited to shell and iron which was available within the region. Shells were procured from within the region; iron was probably obtained from the neighbouring NWFP. Overall, the region seems to have been in turmoil in the post-Gupta period.

Uttarakhand and Himachal Pradesh

The northern Himalayas in the Kumaon region are included in the Uttarakhand and Himachal Pradesh areas. There are different views about the character of political hegemony in the region. Huien Tsang accounted for twenty Buddhist shrines and Viharas at Kangra where he stayed in c. 631 A.D. He reports that the king of the state was an ally of Harsha of Kannauj (Kaushal 1988: 20-21). However, the post-Gupta period history is more or less shrouded in obscurity. Only stray references around this region are found for the period (Agarwal and Kharakwal 1998:155). The different sites in the post-Gupta period were Virabhadra temple in Rishikesh, Bharat Mandir in Dehra Dun and Sirmour (IAR 1973-74: 29; IAR 1973-74: 29; 1982-83: 96; 1984-85: 147).

Sitewise Distribution of Manufactured Objects

Chart 4c shows the different raw materials in the region. These were copper, iron, silver and stone.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been noted here.

Character of Sites and Distribution of Manufactured Objects

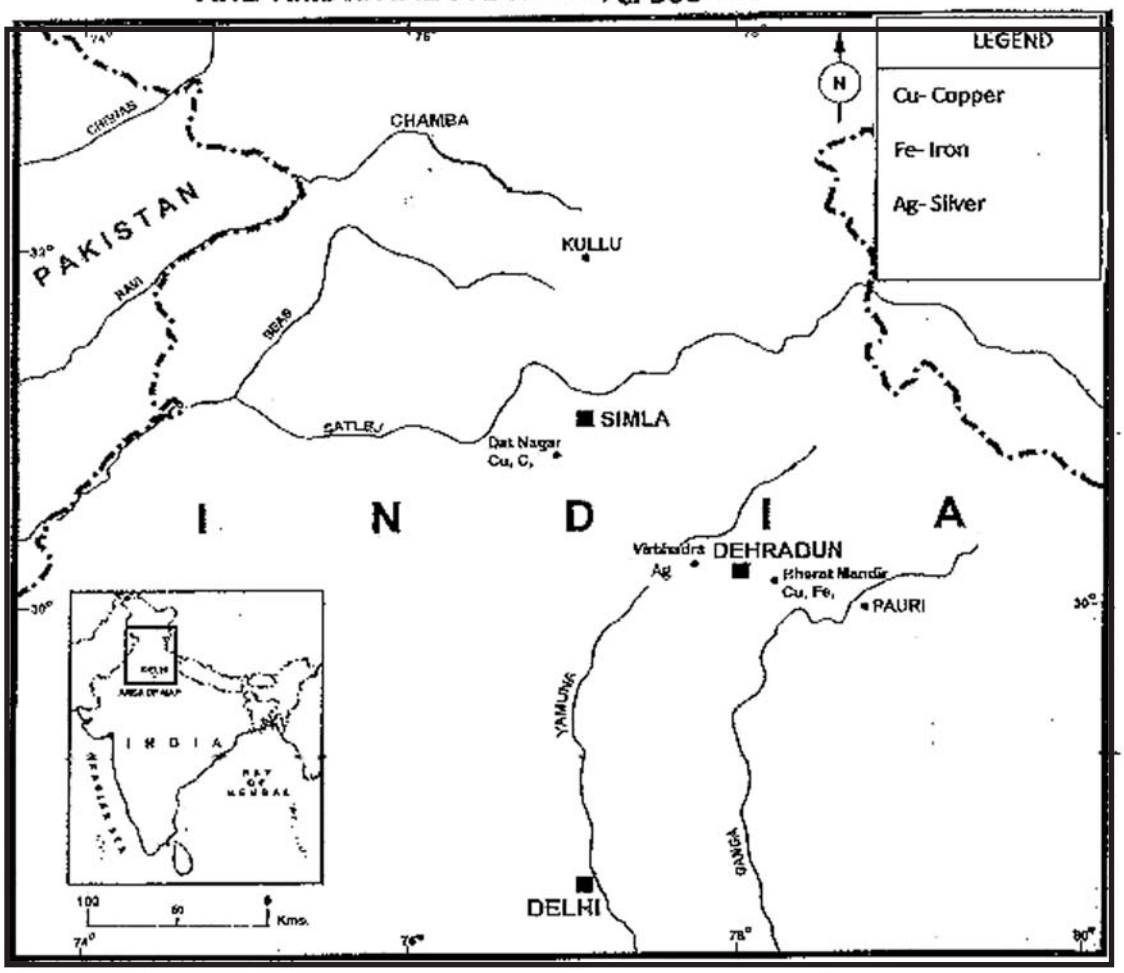
The accounts of Hieun Tsang mention Mayapura close to Hardwar on his journey from Thanesar to the hills. The Brahmapura kingdom was described by Hieun Tsang, the location of which is speculated among scholars. Cunnigham identified it in the Garhwal-Kumaon region (Saklani 1998: 52). Another kingdom that finds mention in accounts of Huien Tsang is Govisana to the south-east (Saklani 1998: 54). Kharakwal in the *Archaeology of the Kumaon region* (1998-99:161-173) has noted that the Katuri dynasty ruled the hills from the 7^{th}-13^{th} c. A.D. and this was the golden period of

Chart 4c
Uttarakhand and Himachal Pradesh---c.500--750 A.D.

Raw Materials	*Virbhadra Temple, Rishikesh*	*BharatMandir*	*Sirmour*
Copper/Bronze		coins, bangles	
Iron		implements	
Silver	Gadhaiya coin		
Ordinary Stone			stone sculptures

MAP-43

SITE WISE DISTRIBUTION OF RAW MATERIALS IN UTTRAKHAND AND HIMACHAL PRADESH, c. 500-750 A.D.



architectural activity in the region. Brahmaur in Chamba in Himachal is famous for its wooden shrines. The temple of Lakshmana devi of *Mahisasurmardini* was built in c. 700 A.D. It has a rectangular sanctum preceeded by a pillared mandapa and ornate doorway. Chakrabarti (2006: 463-5) cites these as examples of temple building activity in the Chamba, Garhwal, Kangra and Kulu as areas that reflect on the expansion of artisanal activity in the region. In the Uttarakhand region temple complexes are reported among which Lakhhmandal in DehraDun and Lakulisa temple (c.725-50 A.D.) at Jogeshwar near Almora are well known. The most famous temples date from the eighth century A.D. (Chakrabarti 2006: 463).

The region itself is not very clearly represented for the post-Gupta period from the archaeological point of view. However, smaller sites with pottery and inscriptional evidence indicate that the territory was inhabited during this period. In the Alaknanda valley in the Garhwal Himalayas, a few sites of this period have been noted in explorations. Sites such as, Mana, Tapoban, Reni, Subhaien, Adibadri, Ratura, Ufalda and Naithana and Simli have yielded pottery of red ware ascribed to the post-Gupta period (Khanduri 1994: 45-7). Narayankali is a small town near Almora. Goddess Kali shrine is ascribed to this period. Shiva, Vishnu, Lakulisa and Matrika icons were found here with characteristics of the Katuri dynastic period. Terracotta beads, spindle whorls were also picked up from the site of Narayankali (Kharakwal 1998-99: 169). At Gopeshwar, potsherds of the post-Gupta period have been found along with the Trident inscription which indicates occupation of the site during the post-Gupta period. The region was under Naga rule in this period (Khanduri 1994: 61). At Chadpurgarhi a continuous habitation was noted from the fourth century onwards. A fortress of the Garhwal Rajas is also noted (Khanduri 1994: 46). At Virbhadra Temple in Dehra Dun district, three stages of occupation were found in excavations. The last phase dated 6^{th}-7^{th} c. A.D. has pottery fragments of earlier periods. A marked decline in the pottery technique was noticed (IAR 1973-74: 29). Ratura in Pauri has exposed two phases in excavation. The first is dated second century B.C. to second century A.D. The last phase has a gap of six centuries and was reoccupied in the eighth century A.D. It is dated eighth to twelfth centuries A.D. (IAR 1988-89: 89).

Epigraphs of this time period are also known from the region. The Barahat Trident inscription, Lakhmandal inscription and the Sirohi Gopeshwar inscription of Sarvavarman, a Maukhari king are some such examples. That, the Maukharis attempted to rule this part was evident from the inscription found at Gopeshwar (Khanduri 1994: 61). At Chetri in Himachal, a fifth-sixth centuries A.D. inscription was found. An inscription of Maukhari prince, Meeruvarman of seventh century A.D, has been found from Chamba, Bramhar and Chatrahi (Kaushal 1988: 20; Agarwal and Khararwal 1994:28). Taleshwar copper plates issued by the Paurav-Varman kings in fifth century A.D. are the only direct evidence of this region's history known so far (Agarwal and Khararwal 1998: 155-7).

The few resources that were used at the sites are commonly available. Silver coins of the local Katuri dynasty were found at Virabhadra Temple, Rishikesh along with Gadhaiya coins (IAR 1973-4: 29). Copper and iron artifacts have been found from Bharat Mandir. The iron implements have not been specified. Stone sculptures are reported from Sirmour (IAR 1984-85: 147).

Raw Materials Available Within The Sub-Region

The presence of copper, iron, silver has been noted on p. 49.

Raw Materials Available Outside The Sub-Region

No raw materials were procured from outside the sub-region.

The Uttarakhand and Himachal region as understood by our survey in the post-Gupta period was probably inhabited thinly. The absence of manufacturing activity also substantiates this point. There is a need for more intense archaeological investigation in the region. The evidence of habitation has come from smaller sites with find of red ware pottery continued from the previous period. However, the remains in form of structures and artifacts are hard to find. With the minimum use of resources, there was no need for an exchange network to grow. All the resources were locally available possibly making it a self sufficient region from this point of view.

Indo-Gangetic Divide and the Punjab Plains

After the fall of the Gupta suzerainty and until the rise of Harsha of Kanauj, this region was not ruled by any single power. While coins of Toramana (Huna) have been found in the Punjab as proved by the Kura Salt Range inscription; the Nirmand copper plate inscription from Kulu dated to the sixth-seventh century A.D. gives an impression of the region being under the Maukharis of Kannauj. A Prakrit work '*Gaudaavaho*' of the seventh century by Vakpati narrates milliary exploits of Yasovarman, the ruler of Malwa into Thanesar and the Himalayas (*Antiquities of Himachal* 1985: 20-1). The different sites in this region of the post-Gupta periods are, Sunet, Thanesar, Rupar and Agroha (IAR 1983-84: 67; ed. Mani and Saran 2006; IAR 1953-4:7; Srivastava 1999).

Sitewise Distribution Of Manufactured Objects

Chart 5c shows the different raw materials used in the post-Gupta period. These are copper, iron, gold, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture of artifacts is noted in this period.

Character of Sites and Distribution of Manufactured Objects

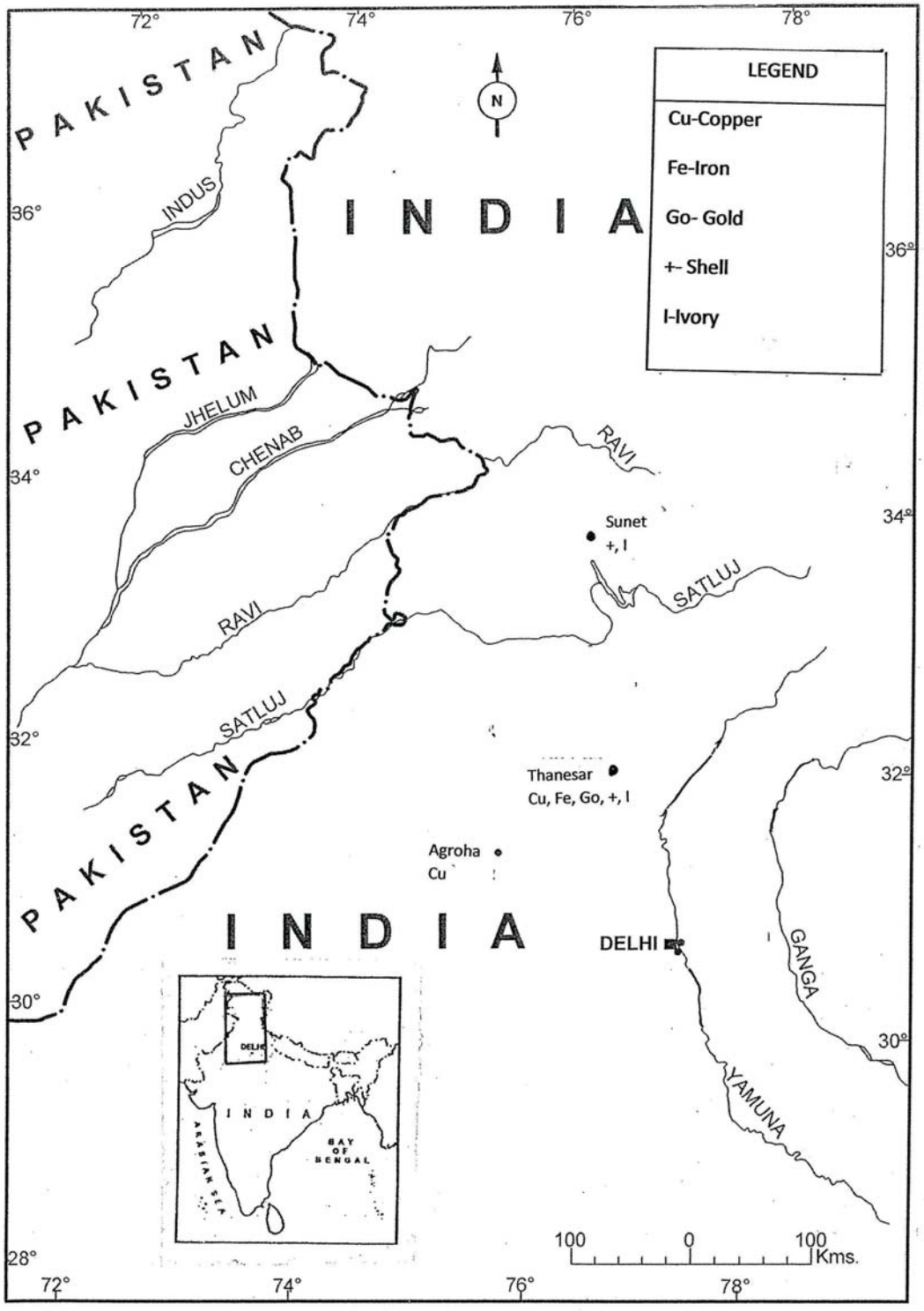
There is not much information regarding the urban sites of the region for the specific period. Some of them are Agroha in the Indo-Gangetic Divide and Rupar (which has a dating from second century B.C. to sixth century A.D) (IAR 1953-4:7). A terracotta sealing in character of fifth-sixth centuries A.D. was found atRupar along with pottery of red ware (Sharma 1953: 126). Thaneshwar was the capital of the Pushyabhutis under Harshavardhana. Bana mentions a defence wall and moat around the palace with two storey *dhavalagriha*. Excavations revealed a massive palatial building complex comprising several rooms. The site continued to be in use even in the Rajput period (ed. Mani and Saran 2006: 34). The post-Gupta period layers yielded terracotta ritual objects and other artifacts. A fragmentary stone inscription of seventh century is also noted. At Agroha, stratum II yielded pottery including spouted jars and perforated vases and terracotta objects. The structural remains unearthed included solid brick walls and floors (Srivastava

Chart 5c
Indo-Gangetic Divide and the Punjab Plains —c. 500—750 A.D.

Raw Materials	*Sunet*	*Thanesar*	*Rupar*	*Agroha*
Copper/Bronze		antimony		coins rod
Iron		axe		
Gold		alloy coin		
Semi-Precious stone	unspecified beads	unspecified beads		
Shell	bangles	bangles		
Ivory	bangles	bangles	bangle, needle	

MAP-44

SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE INDO-GANGETIC DIVIDE c. 500 - 750 A.D.



1999: 2). Remains of a stupa have been found at Agroha. The bricks of sixth-seventh centuries A.D. used in the construction have been found along with copper coins (Kesarwani 2001-02: 90). Sunet is a small site of this period as far as information about it is indicative. Period VI (c.600-800 A.D.) at the site is characterised by a large number of 'Kota' coins and dull red slipped pottery. The houses were constructed of preused bricks. Terracotta figurine, balls were the other antiquities recovered from the site (IAR 1983-4: 69).

The resource usage at these sites of the Indo-Gangetic divide and Punjab plains is very scanty. Copper has been used at Thansesar and Agroha as antimony rods and coins. A single iron axe is found from Thanesar. Also a gold alloy coin was recovered from Thanesar. The other unspecified objects are of semi-precious stones, shell bangles, bone and ivory bangles and dice.

Raw Materials Available Within The Sub-Region

Gold

Gold washing is carried on at various places in the upper reaches of most of the rivers (I.G.I Punjab 1908: 77). Practice of gold washing in Punjab is of considerable antiquity. It is washed in Ambala and Patiala districts (Ball 1881: 212).

Ivory

Elephants are available in the forest regions at the foothills of the Himalayas.

Raw Materials Available Outside The Sub-Region

RAJASTHAN

The presence of copper and iron has already been noted on p.30 and 55.

SINDH

Shells

Shells were available along the Sindh coast

Epigraphic, Numismatic and Literary Linkages

The Indo-Gangetic doab and Punjab plains was possibly in contact with Rajasthan in this period as evident from the find of 'Kota' coins from Sunet. The northern and

western part of India in the post-Gupta period was under the influence of the Huns. P.L.Gupta (1969: 59) observes that the Huns invaded India in the fifth century A.D. and marched towards the territories of the Gupta empire. In this process they occupied western India and Malwa. Coins of the Huna ruler Mihirkula has been found from different parts of Rajasthan such as, Sambhar, Jalor, Nagaur, Jhalawar and in the region of Mewar, Marwar, Kota and Jaipur (Hooja 2006: 144). The Eran stone pillar inscription of Bhanugupta dated to the sixth century A.D. indicates that the Toramana and Huns held sway over Gwalior, Punjab and Kashmir and added much of Rajasthan and Malwa to their empire. The Eran inscription of Toramana dated to the fifth century A.D. describes him as the suzerain lord of local kings (Hooja 2006: 142; Bhandarkar 1981: 352). That, Rajasthan or some parts of it were part of the Huna Empire in the fifth century A.D. is therefore not unlikely.

The Indo-Gangetic divide and the Punjab plains in the post-Gupta period had few sites with habitation of this period. The urban sites as Thanesar, Agroha, and Rupar were continuing from the earlier periods and do not yield much archaeological information. Their artifactual repertoire and the non existence of manufacturing activity substantiate this point. The primary interaction of this region during this period was possibly with Rajasthan for procuring copper and iron. Shell was probably procured from Sindh coastline.

Upper Gangetic Plains

The Upper Gangetic Plains are known as the Aryavarta. In the post-Gupta period the sites in the Upper Gangetic Plains are Ahichchhatra, Sonkh and Hulaskhera. Besides, a number of smaller sites have come up in explorations.

Sitewise Distribution Of Manufactured Objects

Chart 6c shows the different raw materials used in the post-Gupta period. These are copper, silver, agate and schist.

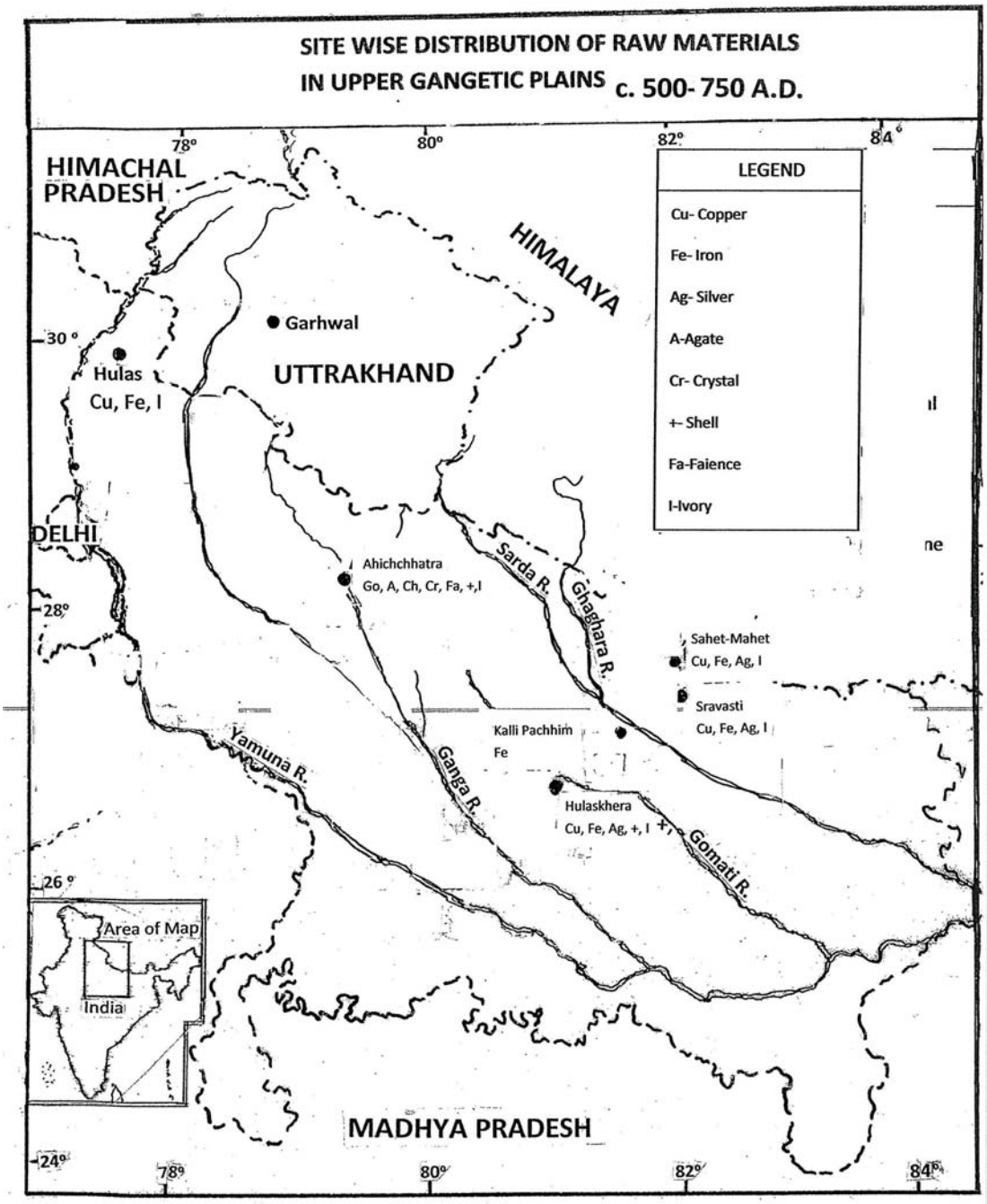
Evidence of Manufacture of Finished Products At Different Sites

Iron: Iron slag was noted in Period III at Kalli Pachchhim dated between fourth and eighth centuries A.D. (Tewari 1999: 13).

Chart 6c
Upper Gangetic Plains—c. 500---750 A.D.

Raw Materials	*Ahichchhatra*	*Hulaskhera*	*Sahet-Mahet/ Sravasti*	*Kalli Pachchhim*	*Hulas*
Copper/Bronze		coins,anti-mony rods	objects,coins		coins
Iron		spear,arrow-heads,nails, rings,hooks, bangles	objects	slag	objects
Gold	objects				
Silver		coins	coins		
Semi-Precious stone	Agate,Chalcedony beads,Crystal beads		unspecified beads		
Ordinary Stone			stone sculpture		
Faience	beads, spacer				
Shell	bangles	bangles			
Ivory	game pieces	bangles,combs	objects		scale

MAP-45


SITE WISE DISTRIBUTION OF RAW MATERIALS
IN UPPER GANGETIC PLAINS c. 500- 750 A.D.
78°
80°
82°
84°
HIMACHAL PRADESH
HIMALAYA
Garhwal
30 °
Hulas
Cu, Fe, I
UTTRAKHAND
DELHI
28°
Ahichchhatra
Go, A, Ch, Cr, Fa, +,I
Sarda R.
Ghaghara R.
Sahet-Mahet
Cu, Fe, Ag, I
Sravasti
Cu, Fe, Ag, I
Kalli Pachhim
Fe
Yamuna R.
Ganga R.
Hulaskhera
Cu, Fe, Ag, +, I
Gomati R.
26 °
Area of Map
India
MADHYA PRADESH
24°
78°
80°
82°
84°
LEGEND
Cu- Copper
Fe- Iron
Ag- Silver
A-Agate
Cr- Crystal
+- Shell
Fa-Faience
I-Ivory

Character of Sites and Distribution of Manufactured Objects

The two urban sites of the region are Ahichchhatra and Hulaskhera. Ahichchhatra was the capital of Panchala according to the *Mahabharata*. The settlements here ranged from 300 B.C to 1100 A.D. (Sharma 1953: 140). Chakrabarti (2006: 460) has noted a sixth century temple at Ahichchhatra near Bareily as part of the temple building activity since the Gupta period onwards. Excavations at Sonkh in the Mathura district revealed that from the level 15 onwards, of early medieval phases were a picture of destruction and decay, according to Hartel (1993: 71). The ruins were mainly fragments of uncovered walls. Some structures showed reuse of the bricks and structures that were partly rebuilt. Grey stone reliefs are attributed to this period depicting deities for domestic worship. Pottery of this period shows no distinct datable features except the decoration of black painted stripes, swans and peacocks. The pottery and fragments of sherds were red ware in shape of vessels, jars and bowls (Hartel 1993: 71, 75, 87). Sahet-Maheth in Baharaich district yielded grey stone sculpture of seventh century A.D. (Marshall 1910-11: 18). At Sravasti, excavations revealed rudimentary house complexes of Gupta-post-Gupta period with masonry work. Terracotta figurines, moulds, seals and sealing were also found (IAR 2001-02: 275). Excavations in Kalli Pachchhim in the Lucknow district exposed period IV dated 4^{th} -8^{th} c. A.D. The strata yielded red ware, terracotta figurines, and iron slag and animal bones. A rammed mud floor was found. The floor was marked by burnt patches and a small pit besides the potsherds was found (Tewari 1999: 13, 23). Kauris were found at this level indicating that they were either used as medium of exchange or worn as ornament (Tewari 1999: 136). Tewari and Srivastava (1995-96: 72) reported the yield of soft stone potteries like lid, dishes and copper bowls from Musanagar near Kanpur dated to the post-Gupta period.

The resource-use at these two sites is varied though not profuse. Most artifacts have been recovered from Hulaskhera. It is a smaller site than Ahichchhatra. Copper and iron has been used at Hulaskhera, Hulas, Kalli Pachchhim and Sravasti. They are mostly in the form of coins and antimony rods, and spearheads, arrowheads, hooks, bangles, nails and rings. Gold objects have been found at Ahichchhatra but have been left unspecified. Silver coins have been recovered from Hulaskhera and Sravasti. Amongst semi-precious stones agate, chalcedony, crystal beads along with faience has

been used as beads. Other materials used are shell as bangles, ivory as bangles and comb and bone as arrowheads and awls from both the sites.

On the surface, at Lakhmapur in the Hardoi-Kannauj sector, was a rich concentration of brickbats. It may be assumed on this basis that it was an impressive structural site. On this basis, we would infer it to be a large monastic site in the post-Gupta period when Kannauj was in its heyday (Chakrabarti 2007: 51). A few sites were noted in explorations in the Saharanpur district. These were Kanarikhera, Saphaw which yielded red ware of Gupta as well as early medieval period. Goulolakhera and Ghuswari in the Sadar tehsil yielded red ware along with brickbats of the Gupta-early medieval period (IAR 2001-02: 255, 257). Manwan-Dih in Sidhauli tehsil has produced a layer dated fourth-seventh century A.D. The remains here show the reuse of bricks in this period (HemRaj 1994-95: 41).

Raw Materials Available Within The Sub-Region

The presence of agate, gold and ivory has been previously noted on p.62-63.

Raw Materials Available Outside The Sub-Region

RAJASTHAN

The presence of copper, iron, silver, chalcedony, crystal and faience has been noted on p. 30,55,110.

SINDH

Shell

The Sindh coastline was the possible source of shells.

Epigraphic, Numismatic and Literary Linkages

The Upper Gangetic plains had possible links with Rajasthan for resource procurement. Rajasthan in this period was divided into different principalities ruled by various clans and their chiefs such as the Mori dynasty in southeast Rajasthan, the Guhilas of Mewar in the seventh century; the Aulikaras of Mandsor extended their rule over Chittorgarh region as a fragmentary inscription found here mentions the governor of Mandsour and Madhyamika during Yasodharman's reign (Hooja 2006: 144, 145, 149). The use of feudatory titles in the inscriptions of Guhila clan of Mewar

and Udaipur indicates that they may have owed homage to king Harshavardhana of Thaneshwar and Kannauj (Hooja 2006: 159). Upinder Singh points out that some of the subordinate rulers who used feudatory titles like *samanta, mahasamanta* used the Harsha era of c.606 A.D. in their inscriptions (Singh 2009: 562). Several inscriptions of Harsha Era were found at different places in Rajasthan. These were found at Bharatpur, Alwar, Dungarpur, Udaipur and Jaipur (Sircar 1965: 295-6). That the region of Rajasthan was under influence of Harsha is further strengthened by the prevalence of Harsh era there in the seventh century (Goyal 2006: 223). Harsha carried several military campaigns and was victorious against the ruler of Sindh in the northwest and Vallabhi in Gujarat in the west. The Narmada was the southern boundary of his empire (Singh 2009: 562). It might be conjectured that the influence of Harsha was as far as Sindh and included portions of Rajasthan-Gujarat as well.

The Upper Gangetic Plains had a moderate spread during the post-Gupta age as understood on the basis of available archaeological information. The sites were surely less in number and were not particularly large urban sites except Ahichchhatra, and Hulaskhera, Sonkh and Sahet-Maheth/ Sravasti. The amount of artifacts recovered was moderate. The structures revealed through excavations and explorations were in dilapidated state. Traces of habitation could be seen in specific pockets, such as the Buddhist settlements of Sravasti and Sahet-Mahet. Ahichchhatra and Hulaskhera were possibly the larger sites of this period. Most other settlements were small sites, a cluster of them seen in the Saharanpur district. Evidence of manufacturing activity comes from a small site of Kalli Pachchhim in Lucknow district in the form of iron slag.The region used few resources which were probably obtained from neighbouring regions. Resources such as copper, iron, silver, chalcedony, faience were possibly procured from neighbouring Rajasthan and crystal from Uttarakhand to its north. Shells were probably obtained from the Sindh coastline.

Middle Gangetic Plains

The Middle Gangetic Plains is a region rich in history. It is the land where Buddhism took birth and was witness to the formation of early kingdoms from *mahajanapadas* to the Gupta period. From the end of fifth century onwards, Magadha became the epicentre of political feuds. Several smaller dynasties vied for control over the region.

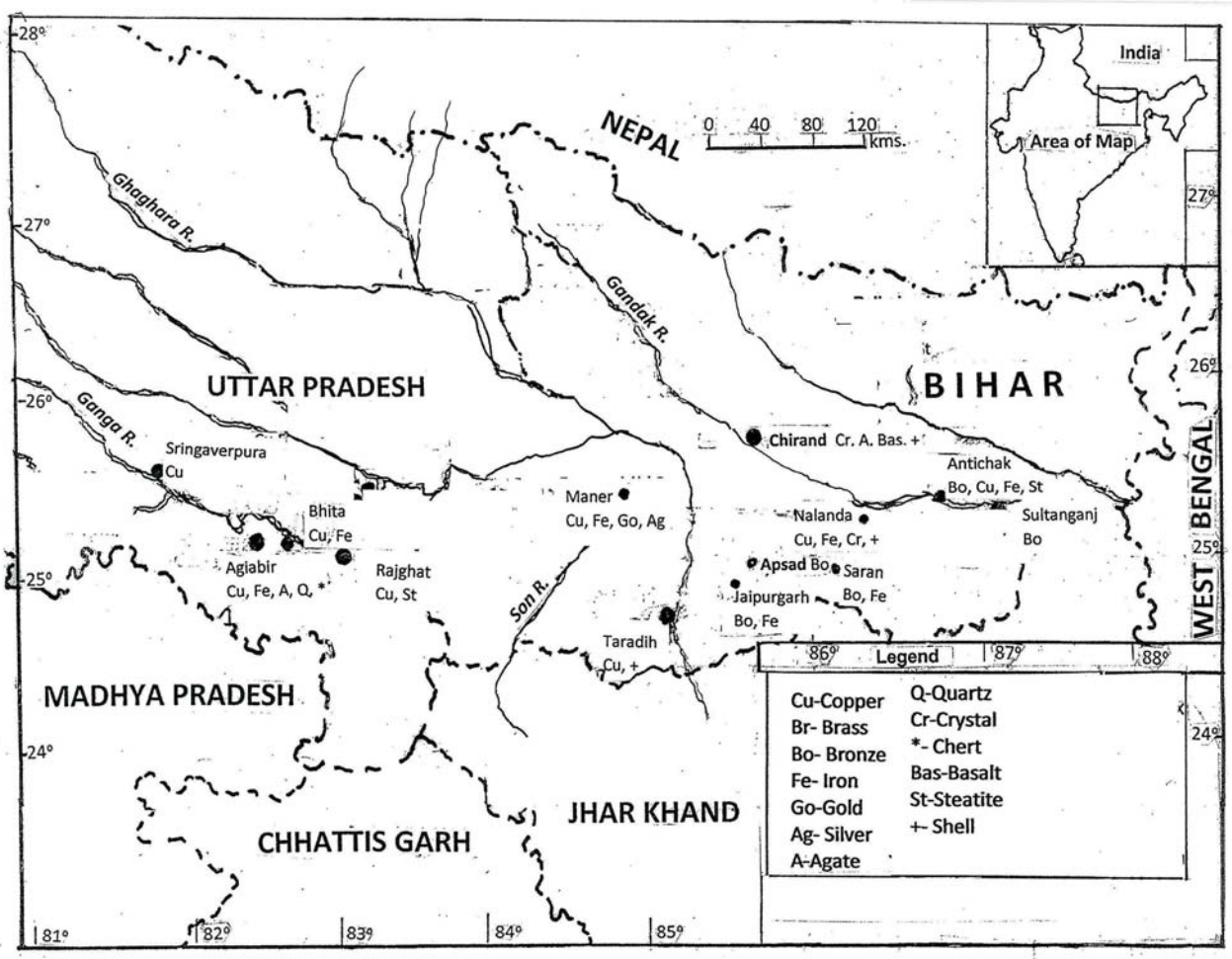
Chart 7c
Middle Gangetic Plains—c. 500---750 A.D.

Raw Materials	*Maner*	*Rajghat*	*Apsad*	*Antichak*	*Jaipurgarh*	*Sringaverpura*	*Taradih*	*Saran*	*Nalanda*	*Bhita*
Copper/Bronze	antimony rods	coins	Bronze bangles	Bronze figure, copper coin	Bronze images	coins	bangles, arrowheads	Bronze images	Copper plates	pendant, finger ring
Iron	objects,nails spearheads		nails	chisel, nail	objects			nails	knife, blade, inkpot, rod	hand anvil, dagger blade blade, arrow head
Gold	ring									
Silver	ear orna-ment									
Semi-Precious stone								pieces	Crystal beads	
Ordinary Stone	beads	Buddha head	beads							
Steatite/Soap stone		Steatite pots		Steatite seal						
Shell							bangle		cowries	

Chart 7c (continued)

Raw Materials	*Agiabir*	*Chirand*	*Sultanganj*
Copper/ Bronze	antimony rods, objects	bangles, armlet	Bronze images
Brass		bangles	
Iron	nail, spearhead, objects		
Gold		coins, disc, beads, wire rings	
Silver		alloyed ornaments	
Semi-Precious Stone	Agate, Quartz beads	Crystal, Agate beads	
Ordinary Stone	Chert beads	Basalt sculptures	
Shell		bangle piece	

MAP-46



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE MIDDLE GANGETIC PLAINS c. 500- 750 A.D.

These were the later Guptas, the Maukhari dynasty, the Gaudas of Bengal and the Palas towards the eighth century A.D. The different sites of the post-Gupta period are Maner, Chirand, Bhita, Taradih, Oriup, Nalanda, Saran, and Antichak, Jaipurgarh (IAR 1985-86: 12; Verma 2007; Marshall 1911-12; IAR 1981-82: 11; 1982-83: 16; 1966-67: 6-7; 1981-82: 67; C. Mani 2008;; IAR 1975-76: 7, 75).

Sitewise Distribution Of Manufactured Objects

Chart 7c shows the different raw materials used in the post-Gupta period. These are copper, bronze, iron, gold, silver, crystal, steatite, shell and bone.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Pipes for smelting metal and slag were found at Oriup in Bhagalpur district in the post-Gupta levels (IAR 1966-7: 7). Khatilwar on the bank of the Loni river, has a sloping structural mound of presumably post-Gupta period where traces of iron slag on the surface were found (Chakrabarti 2001: 261).

Character of Sites and Distribution of Manufactured Objects

The urban sites in the middle Gangetic plains in the post-Gupta period are Rajghat, Chirand, Vaishali and Bhita. These sites have been of great importance during the Mauryan and Kushana times and were important urban centres. Period IV at Rajghat dated c.300-700 A.D. revealed regular plan of houses seperated by roads and lanes. Ringwells and soakage pits were replaced with burnt brick drains, the traces of a public well was also found. A structural complex known as a 'warehouse' was exposed and was made of burnt bricks. From the evidence of this period at Rajghat, Chakrabarti (2006: 350) has observed that there was no decline in structural activity in this period which continued upto the 700 A.D.

Fa-Hein who visited India in the early fifth century A.D. has left an account of Kausambi and mentions a monastery called the *Garden of Gosira* (Gositarama) where Buddha once dwelt (Sharma 1949-50: 7-8). A seal of Toramana has been found at the monastery site. Another sealing refers to ‘Huna raja’. A seal of Mihirkula has also been found at Kausambi (Thaplyal 1972:61-62). Excavation exposed the remains of a rampart that was continually heightened till the Huna rulers destroyed the whole complex. The monastery came to an end with the Huna invasion (Ghosh 1990: 212). Numerous sculptures,

Buddhist and Jaina have been recovered from Rajgir which are assigned a date between sixth and eleventh centuries A.D. (Brajmohan Kumar 1987: 72). Aktha in Varanasi district had a long antiquity from the period of the Mauryas. The region passed on successfully under the domain of the Guptas, Maukharis and Ghadavalas as observed by Altekar (Jayswal 2009: 1). Period IV at Aktha was dated c. 300-700 A.D. The site is characterized by brick structures and other artifacts as gold coins and sealing of Gupta rulers were found (Jayswal 2009: 9). At Chirand the excavators have noted a conspicuous absence of the Gupta level. According to them the site seems to have been deserted after period IV (c. 200 BC-300 A.D). It showed signs of rehabitation only in the Period V (c. 700-1200 A.D.) in the Pala period. Black stone sculptural pieces of the Pala period were found from this level. Five structural remains of this period were exposed. Terracotta gamesmen and pottery were found. (Verma 2007: 14, 16, 17, 26). Vaishali, a prosperous city at the time of the Buddha was described by Huien Tsang in the 7th century A.D. as lying in ruins; a sculpture of *Kartikeya* from Basarh has come to light dated to the Pala period in seventh century A.D. (Dilip Kumar 1986: 37, 65).

The resource-use at these urban sites is moderate. Copper has been used at all the three sites in the form of coins, armlet, copper plates, and pendants and antimony rods. Three pieces of brass bangles have been found from Chirand in the Pala layers. Iron artifacts are found at Bhita. The artifacts are blades, arrowheads, knife, dagger, blade and inkpot. Debased gold coins of Kalachuri dynasty belonging to Srimad Gangayadeva were found in a miniature pot from Chirand. Other objects of gold were disc, bead, wire rings, and alloyed silver ornaments (Verma 2007: 143). Among semi-precious stones, only a few crystal beads are found from Nalanda and Chirand. Other raw materials used are steatite pots and shell bangles.

The second tier of small settlements includes Maner, Oriup, Aphsad, Antichak, Jaipurgarh and Saran (IAR 1985-86: 12; 1981-82: 11; 1982-83: 16; 1966-67: 6-7; 1981-82: 67; 1975-76: 7, 75; Roy 1985-86: 29). At Sultanganj, a Buddha image of bronze dated to the seventh century A.D. has been recovered. These have been found in the ruins of a Buddhist monastery (Chakrabarti 2006: 442). The resource-use at these sites is similar to those of the urban sites. Copper antimony rods and coins are found at Maner and Antichak. The other sites in this category are Apsadh, Antichak,

Jaipurgarh, and Saran has yielded bronze images. A gold ring and a silver ear ornament were recovered from Maner. Asapur in the vicinity of Tilmanpur in Kashi-Rajghat sector is a small settlement. It yielded a Surya image and architectural pieces. On stylistic considerations, the site could be dated to the post-Gupta period. All other carvings at this site were half finished or broken. Jayswal (2009: 14-15) observes that perhaps these were carved at the site and were supplied to some other sites.

Some of the explored sites in the region are Sarai Jodh Rai near Damdama where the remains are pottery and traces of structures of the post-Gupta periods structural mound. At Dhanot in Banaras-Allahabad sector, pottery and traces of kilns were found. Also exposed were mud floors with post holes of post-Gupta period; Bihar, a village on the bank of a large *tal* and a minor river Bakulahi from where the pottery evidence and sculptural fragments clearly show the chronological spread between early centuries A.D. and tenth-twelfth centuries A.D. One such sculptural fragment can be dated in the sixth-seventh centuries A.D. Cunningham calls this site by the local name of *Tusaran*-Bihar. The most visible ruins at Unchhdih belongs to the post-Gupta period, sculptures of the post-Gupta stage seventh century A.D. onwards lie around the modern village of Bihar (Chakrabarti 2001: 257,258,260,261,264,230,232,217, 164-5,169).

The religious sites of the region are Janwan, northwest of Ballia, the general impression of being a Buddhist monastery dated to the post-Gupta period, Atrauli, a mound of post-Gupta period is a temple or stupa site. Madhuban is a small structural mound of the post-Gupta phase from where an inscription of the seventh century was found. Sahiya to east of Bhagalpur is a site of a Buddhist monastery has a large mound. Apart from miscellaneous sculptural fragments, one noticed a sandstone Surya image of seventh century A.D. Patharghatta in the Sahibganj-Bhagalpur sector has a standing Vishnu figure, with four separate scenes. It is dated to the sixth century A.D. Mandar Hill is famous for an inscription of the seventh century of 'later Gupta king' Adityasen (Chakrabarti 2001: 257,258,260,261,264,230,232,217, 164-5,169). Garhwa is a modern village which dates back to the post-Gupta period. Here, major architectural and sculptural remains are seen as a massive temple complex with a number of structures has been unearthed. These are dated between the Gupta and the eleventh-twelfth

centuries A.D. Mankameshwar is another site outlining the Vindhyas that produced painted rock shelters alongwith inscriptions of Gupta period and later period (Chakrabarti 2005: 70).

Taradih which is the mound on which the Mahabodhi temple stands and Sringaverpura which is believed to have derived its name from the sage Rishiyasringa who supposedly has his ashram here (Lal 1993: 11). The continuation of temple building from the Gupta period is witnessed in the post-Gupta period also. The Mundeshwari temple in Bhabua has an octagonal sanctum with rectangular hall and dates to the seventh century A.D. A terraced brick and stucco temples dated to the sixth-seventh centuries are from Aphsad near Nawadah (Chakrabarti 2006: 460).

Nalanda was among the earliest centres for learning in the first millennium AD. At Nalanda, the corner towers have sculpted figures of the Buddha and Bodhisattvas in stucco along with the terraced structure of a stupa and *pradakshina* path. They are all representative of late and post-Gupta art and architecture (Mani 2008: 21). Huien Tsang reported to have seen a high copper image of Buddha raised by Purnavarman of sixth century AD (C. Mani 2008: 4). During the reign of Harsha, the royal patronage to Nalanda monastery was visible in the accounts of the foreign travelers. The king is known to have described himself as the servant of the Nalanda monks and build a monastery in brass for them (c. Mani 2008: 5). Even Huien Tsang has given a long list of monasteries that he had found at Nalanda. This is substantiated by the archaeological evidence. Excavations revealed a large area that exposed many monasteries, stupas, shrines and temples (c. Mani 2008: 15). Excavations at Juafardih located southwest of Nalanda revealed stupa remains and burnt bricks. The stupa was encased with brick masonry set in mud mortar. Period III is assigned a long chronology. The site yielded remains of Sunga, Kushana, and Gupta and post-Gupta periods. Pottery of red ware, black and red ware, terracotta figurines, beads, hopscotches, gamesmen, crucibles, and querns were reported. The deposit over the mud stupa of this period contained material which ranged from second century BC to seventh-eighth century A.D. (Saran, Nikoshey, Nayan, Tiwari, Arif and Saxena 2008: 62-9). Excavation at Agiabir revealed habitation remains of Period V belonging to Gupta-post-Gupta periods. Some walls of the preceding period were constructed of reused bricks. The brick paved floors were found in good condition. The structural activity and other finds

show that the area was used as a religious complex. Interestingly, a community kitchen was noted for this period. Besides, red ware ceramic industry included storage jars, inkpot, lids, and bowls and miniature vessels (Singh 2004: 42-43; Tripathi and Upadhyay 2009: 54)). Antichak is the Buddhist monastic site of Vikramsila established by the Pala king Dharmapala in eighth century A.D. The site exposes a stupa area set within a monastic enclosure and several other structures. The main features are a shrine and monastery with 208 monastic cells (Chakrabarti 2001: 164; 2006: 467).

The resource-use at these sites shows the use of copper coins and antimony rods; shell bangles from Taradih. Iron artifacts are found at Nalanda. Among semi-precious stones, a few crystal beads are found from Nalanda.

Raw Materials Available Within The Sub-Region

The presence of gold, lead, ivory and tin has been noted on p.74,196.

Lead and Silver

Bhagalpur division: Lead ores are recorded from Gouripur mine, Dudi Jor, Karda, Gonora, Kejurea and Khureekar (Ball 1881: 290).

Monghyr District: Galena containing small percentage of silver is known to occur near Kharakpur Hills, Chakai Pargana (Ball 1881:290).

Raw Materials Available Outside The Sub-Region

The presence of iron, soapstone, semi-precious stones as quartz, chalcedony and agate (Chotanagpur Plateau) has been noted on p. 76.

CENTRAL INDIAN HIGHLANDS

Crystal

Crystals are available among other semi-precious stones in the bed of the Narmada River at Bheraghat (Srivastava 1968: 23).

LOWER GANGETIC PLAINS

Shell

The Bengal coastline was the nearest source of shells.

Epigraphic, Numismatic and Literary Linkages

The Maukhari dynasty of Kanauj conquered Magadha at the time of Sarvavarman who defeated the Later Gupta king Mahasengupta in sixth century A.D. The Haraha inscription of Isanavarman (c. 554 A.D) refers to his victory over Andhras, Sulikas and Gaudaas. The Andhra adversary was possibly the Vishnukundin King Madhavavarman I (Sinha 1977:112; Raychaudhury 1996: 531). The Maukhari dynasty of Magadha is known to have a friendly relation with the Somavasi rulers of Mahakoshala. The Sirpur inscription of Sivagupta, the King of Mahakoshal refers to Suryavarman (brother of Sarvavarman Maukhari) as *nrpa* and an ally (Sinha 1977: 118). Sarvavarman was the overlord of Kalanjar region and probably held the fort of Asirgarh. The extension of the rule of Maukhari dynasty to south of the Vindhyas is thus attested by the Asirgarh copper seal of Maukhari ruler Sarvavarman found at Asirgarh in East Nimar district in the Central India (Sircar 1983, Vol II: 213; Sinha 1977: 118-19). The connection between the Middle Gangetic Plains and the Central India in the post-Gupta period is not improbable if the reach of the Maukhari dynasty went as far as Vishnukundin kingdom in Andhra.

The Chotanagpur plateau was linked to the middle Gangetic plains and is known through the find of copper cast coins known as 'Puri-Kusana coins of fourth to sixth century A.D. in Singhbhum district where a hoard was discovered on the Rakha hill (Bhengra 2007: 157). Also sculptural representations of *Sapta Matrikas* stylistically belonging to the pre-Pala period of sixth-seventh centuries A.D. were found from Sarikela in Singhbhum (Bhengra 2007: 76). The fact that the Vikramsila monastery was established in the Anga region at Antichak between Bhagalpur and Rajmahal hills in the Pala period makes it more probable that the Chotanagpur plateau was within the sphere of the Gangetic belt.

The link with the lower Gangetic plains is substantiated through the well known fact in history that Harshavardhana of Kanauj marched against Sasanka the ruler of Bengal (Gaudaa) and conquered it. The region was jointly conquered by Bhaskarvarman of Kamrupa and Harsha of Kanauj. The Nidhanpur copper plates of Bhaskaravarman substantiate the fact that the king of Kamarupa (Assam) accepted Harsha's suzerainty and ruled Gaudaa (Bengal) in the sixth-seventh century A.D. (Choudhury 1985: 76-8). Further, the rule of Sasanka (ruler of Bengal in the post-Gupta period) is known to

have extended his influence up to the middle Gangetic plains. The Rohtasgarh stone seal of *Mahasamanta* Sasankadeva, king of Karnasuvarna (Gauda) is evidence of this extent (Sahai 1983: 61). It is a matter of debate as to whose feudatory Sasanka, the Gauda king was. It is understood by Devahuti (Sinha 1977: 132) that Sasanka was possibly a feudatory of Jayanaga who had conquered Magadha.

The Middle Gangetic Plains in the post-Gupta period has a mix of several settlements. Rajghat, Kausambi and Aktha have produced some archaeological remains of the post-Gupta period. The region has a number of religious-urban sites as Taradih, Antichak (Vikramsila monastery) and Nalanda. Others are mostly smaller sites. The artifactual find are moderate. It is rather at the smaller sites that we find gold and silver artifacts. Several urban sites appear in ruins in the aftermath of Huna invasions as described by the Chinese travelers. However sites such as Nalanda and Chirand and Aktha in archaeological perspective give a glimpse of their flourishing state in the seventh century onwards.

There is some manufacturing activity noted in Oriup in Bhagalpur district, but the large number of artifacts associated with such sites is missing. Nor are there any waste products noted at that site. The resource procurement during the post-Gupta period was probably done mostly from within the region. Resources such as gold, copper, tin, silver were available within. The only resources obtained from outside were silver and crystals from the Central Indian Highlands region and shell from the Bengal coastline.

Lower Gangetic Plains and the Chotanagpur Plateau

The north Bengal region known as *Pundravardhana* (modern Mahasthangarh) was a prominent ancient administrative division from the Mauryan times. A part of this unit was Kotivarsha, identified with the site of Bangarh in west Dinajpur district. On the basis of excavations it has been postulated that at least four sites in this region remained in occupation in the post-Gupta period. Huien Tsang describes Karnasuvarna (Murshidabad district) and Tamralipti as places inhabited by 'rich' people. He notes that articles of value and gems are collected in abundance here (*Book X*, Beal 2001: 201). Some of the sites that were continuing from pre Gupta age are Chandraketugarh, Rajbaridanga, Paharpur, Baigram, Bangarh and Mahanad (Chakrabarti, Goswami and Chattopadhyay 1994; Das 1968; Dikshit 1999; Goswami 1948; Majumdar 1934-35: 43).

Chart 8c

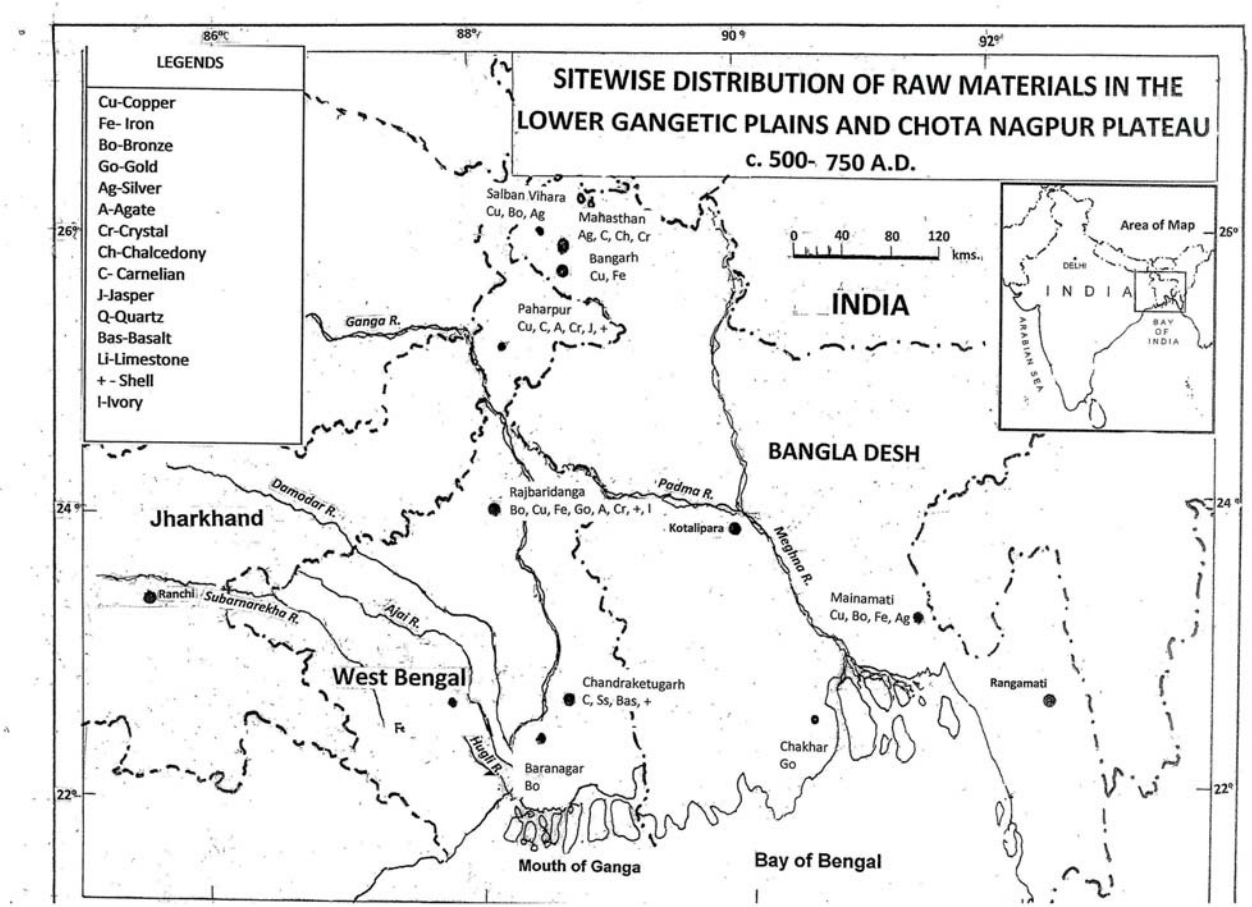
Bengal and Chotanagpur Plateau—c. 500--750 A.D.

Raw Materials	*Chandraketugarh*	*Rajbaridanga*	*Bangarh*	*Baranagar*	*Paharpur*	*Mahasthan*	*Mainamati*	*Salban Vihara*
Copper/Bronze		Bronze rings, bangle pieces, Bronze images plates	Copper plates, bangles, rings, antimony rods	Bronze images	coins,vase, bangles, rings		plates,utensils, dishes,lotas, pots,spoons, Bronze images, relic caskets, earrings, fingerring, bangles	dishes,Bronze image
Iron		objects,nails, spoons,chisels, arrowheads	implements, nails,chisel, awl,knife, dagger, spearhead sword				nails,chain links, hooks,sickels, knife blades, daggers,tools	
Gold		plate				coin	coins, ornaments	coins, rings
Silver							coins, ornaments	coin
Semi-Precious stone	Carnelian beads	Agate, Crystal beads			Carnelian,Agate beads,Crystal, Jasper beads	Carnelian, Chalcedony, Crystal beads	unspecified beads	
Ordinary Stone	Sandstone figure, Basalt figure				grinding stone, grain jars, pestle		images	
Shell	bangle fragments	bangles			lamp,vessels			
Ivory		stick, awls						

Chart 8c (continued)

Raw Materials	*Chakhar*	*Bahiri*
Iron		slag
Gold	coin	
Semi-Precious stone		Agate, Crystal beads, Carnelian, Quartz beads

MAP-47


SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE LOWER GANGETIC PLAINS AND CHOTA NAGPUR PLATEAU
c. 500- 750 A.D.
LEGENDS
Cu-Copper
Fe- Iron
Bo-Bronze
Go-Gold
Ag-Silver
A-Agate
Cr-Crystal
Ch-Chalcedony
C- Carnelian
J-Jasper
Q-Quartz
Bas-Basalt
Li-Limestone
+ - Shell
I-Ivory
86°
88°
90°
92°
26°
24°
22°
Salban Vihara
Cu, Bo, Ag
Mahasthan
Ag, C, Ch, Cr
Bangarh
Cu, Fe
Paharpur
Cu, C, A, Cr, J, +
Ganga R.
0 40 80 120 kms.
INDIA
Area of Map
DELHI
INDIA
ARABIAN SEA
BAY OF INDIA
BANGLA DESH
Damodar R.
Jharkhand
Rajbaridanga
Bo, Cu, Fe, Go, A, Cr, +, I
Padma R.
Kotalipara
Meghna R.
Ranchi
Subarnarekha R.
Ajai R.
Mainamati
Cu, Bo, Fe, Ag
West Bengal
Chandraketugarh
C, Ss, Bas, +
Rangamati
Hugli R.
Baranagar
Bo
Chakhar
Go
Mouth of Ganga
Bay of Bengal

Sitewise Distribution of Raw Materials

The range of raw materials used during the post-Gupta period displayed in chart 8c are, copper, iron, gold, silver, carnelian, jasper, agate, crystal, chalcedony, sandstone, shell and bone.

Evidence of Manufacture of Finished Products at Different Sites

Iron: A broken perforated bottom of a smelting furnace with remnants of slag in its inside and a broken nozzle made for furnace were found at Paharpur (Chandra and Dikshit 1930-34:122).

Copper: Copper slag heaps was found along with Puri-Kushana copper coins surrounding the site of Rakha Hill in Singhbhum district. The site lies in close proximity to ancient copper workings. Coins found here were not trimmed in the edges and lends support to the possibility that the locality was a mint. However, no coin moulds were found at the site (Bhengra 2007: 158).

Character of Sites and the Distribution of Manufactured Objects

The urban sites in the region with post-Gupta settlements are, Bangarh, Rajbaridanga, Mainamati, Paharpur and Chandraketugarh. Mahasthangarh in the Bagura district has been identified with the ancient city of Pundravardhana. The copper plate of the Gupta, Pala-Sena records mention Pundravardhana as an important administrative division (Chakrabarti 1992: 50). The fortification is divided into two stages, Gupta and Pala periods. Structures revealed in excavation belong from the Gupta period to eleventh century A.D. (Sharma 1953: 157). The building remains excavated within a massive enclosure wall shows four periods between the late Gupta and Muslim periods (Chakrabarti 1992: 50, 93). There are numerous mounds in the vicinity of Mahasthangarh. The brick structures in the mounds chronologically belong to the sixth-seventh centuries A.D. roughly between the Gupta-post-Gupta periods. One such site is Lakshmindarer Medh. A number of terracotta plaques show Gupta influence on them (Chakrabarti 1992: 97, 106). Dikshit (1928-29: 92) observes that bricks and houses at Mahasthan were in dilapidated condition from c. 650-750 A.D. Huien Tsang has left an account of Pundravardhana as thickly populated where many reknowned priests of Eastern India resided (Bk X, Beal 2001 reprint: 195). Stucco heads of fifth-sixth century

A.D were found from Mahanad in Hoogly district (Majumdar 1934-35: 43). The copper plate inscription discovered at Damodarpur indicates that the Gupta rulers were the overlords of north Bengal. In the sixth century A.D. also the scions of the family continued to rule the region (Goswami 1948: 2). The Pala period was a prosperous time for the city as is inferred from the finds of the rampart wall. Large houses were constructed as a general practice (Goswami 1948: 1, 2, 8). A unique lotus shaped small tank at the centre originally covered with a pillared canopy was found and dated to the Pala period (Sharma 1953: 155). Kotalipara in Faridpur area has an antiquity dating back to sixth century A.D. as known from coins and inscriptional evidence. A large mud fortification was also found with a moat (Chakrabarti 1992: 158). Chandraketugarh revealed occupational remains of a fortified township in the post-Gupta period. Bahiri in the Birbhum district has yielded a few beads of semi-precious stones from the stratum dated to 4^{th}-6^{th} c. A.D. (Chakrabarti and Jamal Hasan 1982: 113, 120). Samatata-Harikela located in Bangladesh appears as a term in the records of the Chinese travelers of seventh century A.D. Huien Tsang describes it as a region where there were many Buddhist monasteries. Devaparvata was the capital of Samatata (Chakrabarti 1992: 25). Mangalkot in Burdwan district yielded a large number of terracotta images of Gupta-late-Gupta style (Chakrabarti 1992: 151). Tildah in Midnapur district also yielded terracotta figurines of Gupta-post-Gupta period (IAR 1954-55: 23). Excavation at Pakhanna in the Bankura district has revealed an important urban centre of early historic period. In the post-Gupta period level the site yielded a circular kiln. Below this was a burnt mud wall of semi-circular form with profuse charcoal. The pottery was a mixture of red ware, black ware and buff ware. Terracotta female figurines with three tier head gear were found. The site possibly continued to survive as an important urban centre from the third century BC to seventh-eighth century A.D. (Datta 2008: 108).

The resource-use at the urban centres is impressive. Copper, iron and bronze has been variously used. Some of the artifacts are rings, images of bronze; copper is used as coins, plates, ear rings, finger rings, spoons relic caskets. Iron artifacts are mostly from Mainamati. They are in the form of nails, hooks, sickles, knife and blades. Gold plate and coins are only from Mahasthangarh and Mainamati. Silver coins and ornaments are also

from Mainamati. Most of the beads in semi-precious stones are recovered from the urban sites. The varieties are agate, carnelian, crystal, jasper and chalcedony. Sandstone images are sporadic finds. The other resource-used is shell for bangles.

The different small settlements in the region are Atghara, Baranagar, Baigram, Kandaran and Salban Vihar. Atghara northeast of Baruipur was a small urban settlement. Habitation here continued from the Mauryan period to the tenth-twelfth centuries A.D. (Chakrabarti, Goswami and Chattopadhya 1994: 148). Kandaran in the Malda district has general occupational levels from early historic period to tenth-twelfth centuries A.D. (Chakrabarti and Chattopadhyay 1992: 137). At Dehband in west Dinajpur a major mound spread over three hundred in diameter had bricks of Gupta-post-Gupta period. These were unfortunately looted. Images of deities are also reported locally (Chakrabarti and Chattopadhyay 1992: 141). Bhitargarh in Dinajpur district has ruins of a mud fort. The size of bricks found depicts remains of pre-Muslim period (Chakrabarti 1992: 144). The resource-use is limited at these sites. However bronze images, gold and silver coins are found here. Nimgachi in Pabna district has exposed fifty mounds in all. They produced Gupta coins and terracotta plaques and belong to a slightly later date (Chakrabarti 1992: 157). Goswami Khanda in Burdwan district had exposed Gupta-post-Gupta habitation remains (Thakur 1980-81: 141). Gold coin of Sasanka was found in Chakhar of Barisal district (Banik 2006-07: 132).

The religious sites of this period include Rajbaridanga in Murshidabad district which was locally known as Raja-Karna's palace. The site in the post-Gupta period was an urban-religious centre. It is postulated by the excavator that the site was in successive occupation from the second-third centuries A.D. to the twelfth-thirteenth centuries A.D. Ornamented stucco heads of the fifth-sixth centuries A.D. were recovered from here (Das 1968: 8, 42-43). In the post-Gupta layer, an area was found to contain a solid deposit of burnt grains. This area was probably part of a granary (Chakrabarti 1993: 42-3). Also terracotta seals and sealing bearing *Raktamrittika* legends (5^{th}-6^{th} to 8^{th}-9^{th} c. A.D.) lends support to the identification of the *Raktamrittika* monastery of Huien Tsang's accounts with the present site of Rajbaridanga (IAR 1972-3: 38). The excavations at the site of Raktamatrika reveal the monastery in a flourishing condition in the seventh century A.D. (Chakrabarti 1992: 69). Thakur (1980-81: 141) observes

that the post-Gupta phase was structurally rich in terms of their remains. Among the terracotta seals and sealings, there is a seal with Pallava script of 7^{th}-8^{th} c. A.D. engraved on it (IAR 1968-69: 43). Paharpur situated amidst alluvial plain of north Bengal was an equally important administrative unit during the Gupta period. Epigraphs dating from the mid fifth to late sixth century A.D. indicate that Gupta rule continued in this region with the provincial governor stationed at Pundravardhana. Stone sculptures recovered from the main temple at Paharpur distinctly represent the tradition of the later Gupta period (Dikshit 1999: 17, 37). Paharpur has ruins of the Buddhist temple and monastery of Somapura founded by Dharmapala (c. 770-815 A.D) (Sharma 1953: 155). At Bahiri east of Bolpur no pottery was recovered. However, the mound is dated to Gupta-post-Gupta period (Nag and Chakravarti 1978-79: 118-119). Period III (c. 4^{th}-6^{th} A.D.) here exposed a two meter wide foundation wall with off-sets belonging possibly to Buddhist monastic complex was found (Chakrabarti 1993: 182). At Beluti, a large mound alignment of burnt bricks was visible after excavations. It was possibly a Buddhist monastic building dated to the Gupta-post-Gupta period (Chakrabarti 1993: 183). Chakrabarti observes (1992: 44) that the historical understanding of this period is dominated by inscriptions, coins, sculptures and terracotta and few artifactual examples. The above survey reiterates this very observation.

The use of different resources can be seen at the religious sites. Bronze images are found at Rajbaridanga, copper vase, bangles and rings are found at Paharpur, gold plate is exclusively found at Rajbaridanga. Agate, crystal and jasper beads have been found here.

The history and archaeology of the Chotanagpur Plateau in the post-Gupta period is very obscure. Only stray archaeological references are available which date mostly from eighth century onwards. Sasanka, the Gauda king is known to have settled in south Bihar after being ousted by Harsha from north Bengal. Varunika became his capital known as Baruna. Under Pala rulers, Buddhism continued to flourish in the Vajrayana form (Bhengra 2007: 52-53). Sites associated with Buddhism in the Dhanbad district are, Dalmi and Buddhanpur. Here, T. Bloch visited several places with Buddhist remains datable to the tenth century (Bhengra 2007: 52). Sarikala, an important township in Singhbhum district has yielded seven images of divine mother (Sapta Matrikas). These acquired distinct attributes in the Gupta period and stylistically belong to the pre-Pala

period of sixth-seventh centuries A.D. (Bhengra 2007: 74-6). Benisagar also in the Singhbhum district has produced a figure of Karttikeya carved out of rough sandstone dated to the post-Gupta period (Bhengra 2007: 84).

In the Hazaribagh-Giridh region, at Koluha Pahar the inscription of Later Gupta king Vishnugupta of seventh-eighth centuries A.D. was found (Chakrabarti 1993: 39). In the Ranchi-Hazaribagh region, stage VI roughly corresponded to Gupta-post-Gupta periods. Close to this region, Champa in south Bihar, in Period III (c. 5^{th}-9^{th} A.D.) yielded terracotta sealing with Pala characters. The archaeological sequence here indicates a continued occupation from black and red ware phase to early medieval period (ed. Sengupta and Chakraborty 2008: 272, 258).

Raw Materials Available Within The Sub-Region

The presence of copper, iron, gold, and shell has been noted on p. 85 and 86,89.

Tin

Deposits are present in Purulia district at Belamut- Chhendapathar, Jabarban and Kuilapal (Babu 1994: 36). Mines are also present near Giridh coal fields in the Chotanagpur plateau (Babu 1994: 36).

Hazaribagh district: Alluvial tin is reported from Hazaribagh (I.G.I. Bengal 1909: 81). Deposits are found at Nurungo, Semritanar, Pihra and Chappatana in Hazaribagh Old mines are situated adjacent to the village Nurungo (Babu 1994: 36).

Semi-precious stones

The presence of quartz, crystal, jasper, agate, chalcedony and silver has been noted on p.79.

Raw Materials Available Outside The Sub-Region

MIDDLE GANGETIC PLAINS

Sandstone

This was known to have been worked extensively at Kaimur ranges at Chunar, Mirzapur, Parbatpur and Sheorajpur (Ball 1881: 540). J.C. Brown (1936: 158) has observed that Mirzapur, Chunar and elsewhere in the United Provinces have deposits of sandstone and have been worked for a long time.

Epigraphic, Numismatic and Literary Linkages

Huien Tsang's account tells us that Sasanka ruled the entire forest region from Midnapur in Bengal to Surguja in Madhya Pradesh which was included in his kingdom (Bhengra 2007: 55). The Rohtasgarh stone seal of *Mahasamanta* Sasankadeva (c. 619-637 A.D.), king of Karnasuvarna (Gauda) is evidence of this extent (Sahai 1983: 61). It is a matter of debate as to whose feudatory Sasanka, the Gauda king was. Roychoudhury (1996: 537) observes that in the early eighth century A.D, a Gauda king possibly Jayanaga occupied the throne of Magadha.

The *Harshacharita* of Bana clearly relates the hostility between the Gauda king Sasanka on one hand and Harsha of Kannauj and Bhaskaravarman of Kamarupa on the other. It is not improbable that the Middle Gangetic Plains was within reach of the Bengal region in the light of the political developments in the post-Gupta period.

There were quite a few urban centres in this region. Rajbaridanga (Murshidabad district), Goswamikhanda (Burdwan district) and Baigram (Dinajpur district) and Chandraketugarh had rich structural remains in the post-Gupta habitation. Mangalkot, Bahiri, Mahasthangarh are the other urban sites of this region. Manufacturing activity in the region is noted in the form of iron smelting activity at Paharpur and evidence of a mint for copper coins at Singhbhum district in the vicinity of ancient copper workings has been noted. Several small sites have also surfaced with habitation or artifacts from the post-Gupta period. The artifactual repertoire is abundant in the region. A few resources were obtained from within such as copper, iron, shell, tin, bone and ivory. Other resources as varieties of semi-precious stones such as quartz, crystal, jasper, agate and chalcedony were probably available in the Chotanagpur Plateau. The Kaimur range in the Mirzapur district in the Middle Gangetic Plains were the nearest source for sandstones.

On the whole, the Lower Gangetic Plains in the post-Gupta period was an important region in this period. The archaeological representation is mostly in form of sculptures, sealing and inscriptions. The architectural and structural remains are not too forthcoming except description of Buddhist viharas from literary sources and travel accounts.

Northeast India

The northest comprises the Brahmaputra valley formed by a continuation of the eastern Himalayas extending from the easternmost tip of upper Assam to the west of Dhubri on the border of present Bangladesh (Singh 1971: 303). The northeast region also comprises the present states of Nagaland, Manipur, Tripura, Meghalaya and Arunachal Pradesh. After the downfall of the mighty Gupta Empire, the Varman dynasty was the most prominent ruling power in this region. They ruled upto the seventh century A.D. Literary sources as Huien Tsang's account and *Harshacarita* of Bana corroborate the account of the Kamarupa rulers and their alliance with Harshavardhana. The study of the inscriptional evidence between c. 5^{th}-13^{th} A.D by Lahiri (1991) help us in understanding the historical process in early medieval Brahmaputra valley and its peripheral regions. Archaeologically, there is an unfortunate dearth of information that reveals the chronological development of this region. The few sites that we come across are Ambari, Sekta, Vadagokugiri (Chakrabarti 2006; Sharma 1994; Sharma 1993).

Sitewise Distribution of Manufactured Objects

The different raw materials used in the region have been elaborated on Chart 9c. They are copper, bronze, iron, gold and carnelian

Character of Sites and Distribution of Manufactured Objects

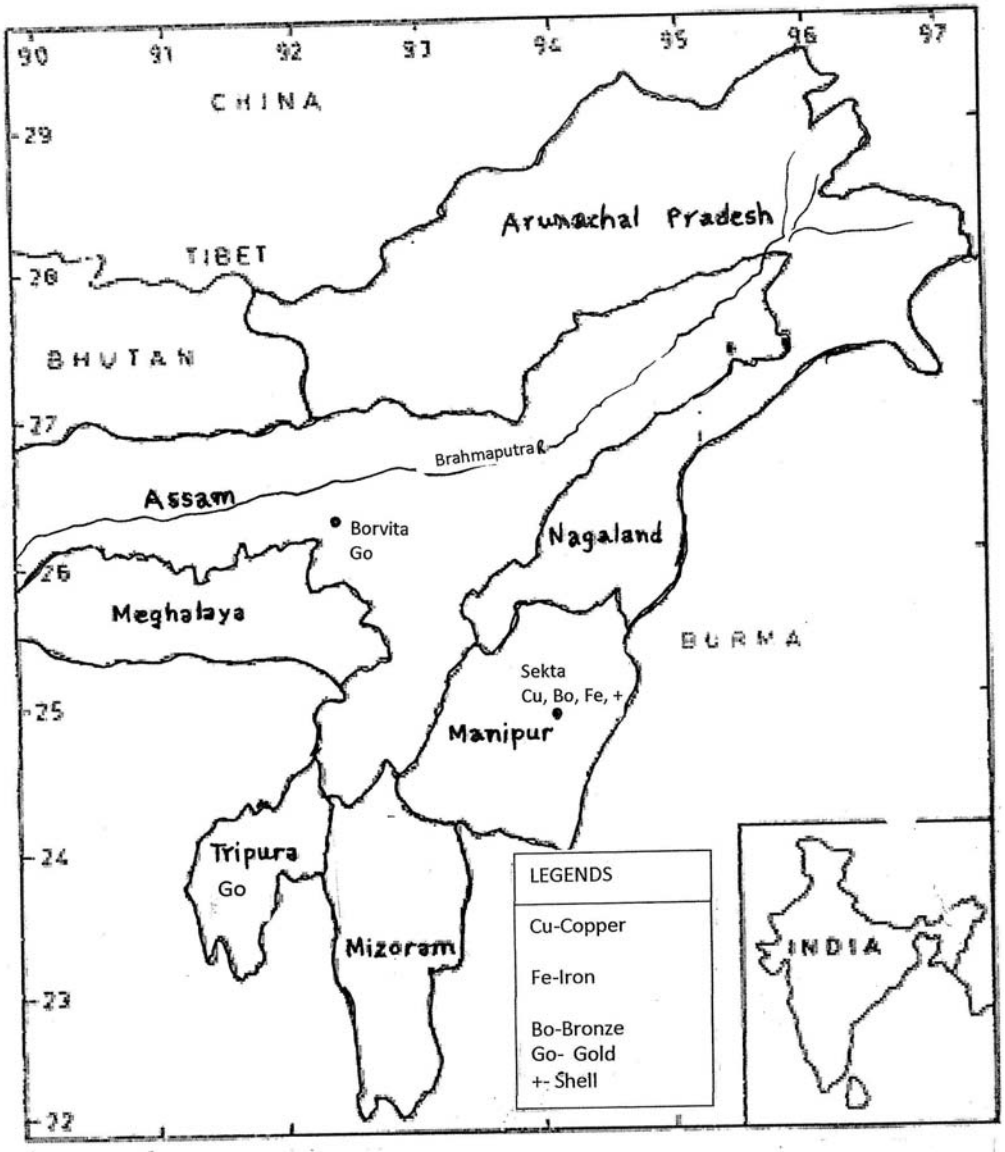
The epigraphic evidence from the Brahmaputra valley based on the study by Lahiri (1991) has brought to light the presence of urban centres in the region between the c.5^{th}-13^{th} A.D. The use of certain terms within the epigraphs denotes the urban centres or royal capitals. These are '*skandhavara*', '*pura*', and '*nagara*' that were interchangable. Also the study shows how the Asamese cities of this period mainly Pragjyotishpura or modern Guwahati and Harupesvara or modern Tezpur were essentially political power centres. Both these places were commercial and religious places of this period (Chakrabarti 2006: 437).

The archaeological information from the region is not profuse. A few sites are known through excavations and explorations. Dah Pavatiya in Tezpur is famous for temple of seventh century A.D. It is a stone built temple dated c.600 A.D. The evidence of a

Chart 9c
North East India—c.500—750 A.D.

Raw Materials	*Tripura*	*Borvita*	*Sekta*
Copper/Bronze			Bronze bangles, nose ring, ear ring
Iron			knife/dagger, scythe, harpoon, spearhead
Gold	coin	coins	
Semi-Precious stone			Carnelian bead

MAP-48



SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE NORTHEAST INDIA

c. 500-750 A.D.

decorated door frame from the temple gives a glimpse of the Gupta art in the post-Gupta period as well (Chakrabarti 2006: 322, 460; eds. Tripathi, Agam Prasad and Awasthi 2003: 862). Ambari in Assam between seventh and tenth centuries A.D yielded in the early phase a large number of brick structures mixed with tiles, clay, drainpipes and stone blocks. A thick boundary wall of brick was found along with paved drains covered by stone slabs. A buff creamy pottery made of kaolin clay was the distinctive pottery from the site (Chakrabarti 2006: 438). Period VII at Sekta in Manipur is assigned to the post-Gupta period. Ceramic evidence from the site showed that habitation continued from period I to VII. The pottery was mainly red ware with long necked bulbous jars and spouted vessels (Sharma 1994: 27-8). Vadagokugiri in Meghalaya was a Buddhist stupa site from the beginning of the Christian era. It was an ancient capital town flourishing with a number of temples. The site was enclosed by a brick rampart and a moat along the outer fortification. Nalbari, the adjoining village, has ruins of two brick temples. Excavations revealed a continiuty of occupation from a date prior to the Christian era. However, no metal or stone antiquities from the site are known (Sharma 1993: 12, 25). The region has been mentioned by Huien Tsang in 643 A.D. as under Bhaskara. It is observed by Sharma (1993: 81) that the antiquity of the site goes back to the early seventh century. Dubarani in Golaghat district of Assam has revealed the ground plan of a brick temple of c.700 A.D. The mounds and brick walls along with a pradakshina patha have been exposed in excavations (IAR 2001-02: 14). Dubarani in Golaghat district of Assam reported a group of brick mounds with a single culture. Digging exposed the plan of a temple of brick with *pradakshina patha* and inner chamber. Stylistically and structurally the temple ground plan was dated 700 A.D (IAR 2001-02: 14). A number of bricks within a Vishnu temple complex was exposed and is stylistically dated c.700-800 A.D (IAR 2001-02: 20).

The Pala School of art that flourished in the early medieval period can be seen at Arunachal, Assam, Tripura, Bangladesh, Bengal and Bihar. Several rock-cut images are reported from the Brahmaputra valley at Kamakshaya Temple area and Tezpur, Urvashi Island, Pancha Pandava in Guwahati and Suryapahar area in Goalpara district (Chauley 2007: 8). Suryapahar in Goalpara district of Assam has exposed several terracotta plaques of *Sri* that depict the influence of Gupta period art forms on local art style (eds. Tripathi, Agam Prasad and Awasthi 2003: 864). The cultural wealth of ancient Tripura has been studied by G.C. Chauley (2007) who highlighted a number of evidences from the early

medieval period (c.7th-8th A.D). They are found scattered in the form of mounds of stupa, temples, coins and sculptures in bronze, stone and terracotta (Chauley 2007: 20). Unakoti in north Tripura has colossal rock cut panels of Hindu divinity. Colossal Siva sculptures and those of other Hindu divinities are reported from the site dated to eighth-ninth centuries A.D. The archaeological and artistic remains at Unakoti establish that the site flourished in the post-Gupta period (Chaiuley 2007: 38, 70). Ancient Tripura was known as *Sukshma desh* or *Kirata bhumi*. Pillak in south Tripura has large mounds containing stupa and temples and sculptures. It was a famous Buddhist site of the seventh century. Huien Tsang reported twenty Buddhist monasteries in the region of Pundravardhana, and north Bengal. Silver coins of seventh-eighth centuries A.D. with the legend 'Piraka' are found from the site (Chauley 2007: 20, 38). One such mound at Pillak is known as Thakurani tilla and has exposed pottery from post-Gupta period onwards dated sixth-eighth centuries A.D. (Chauley 2004-05: 199).

Coins of the pre-Ahom Assam are found from Paglatek in the south bank of the Brahmaputra. These are imitation of Gupta gold coins that were in use in the seventh century and later. Same type of coins has often been found from Tripura and Bangladesh and contains the name of rulers who flourished after Sasanka (c.600-25 A.D) (ed. Barpujari 1990: 56; Choudhury 1985: 203).

The resource-use is minimal at the limited sites in the northeast region. Copper nose and ear ring are found at Sekta in Manipur. Bronze bangles are also found from Sekta. Other metal artifacts were also recovered from Sekta. These were iron used as spearhead, harpoon, knife/ dagger and scythe. Gold coins were recovered from Tripura and Borvita (Assam). A carnelian bead with deep circular groove was found from Sekta of this period.

Raw Materials Available Within The Sub-Region

The availability of copper, iron has been noted on p. 89, 90.

Gold

Tributaries of the Brahmaputra such as the Subansri, Lohit, and Dihang have auriferous placers which have been worked in the past. These have yielded auriferous sands from which gold was recovered (Gopendra Kumar 1997:208; Ziauddin and Narayanswami 1974:128).

Tin

Tin is available in the calc-silicate rocks and granitoids belonging to Pre-Cambvrian Chungthang formation. The ore is available in north Bengal district at Singhik-Chungthang, Chungthang-Lachen Mumsang; west Sikkim at Chitre (Babu 1994: 62). Tin is also available in the quartzites, phyllite slaty shales, mica shistose rocks of Migi formation. The ore is available at lower Subansri district in the Ranga valley (Babu 1994: 62).

Raw Materials Available Outside The Sub-Region

GUJARAT

Carnelian

Ample resources are available in Rajpipla in Gujarat. Its occurence has been noted on p.110. This has also been discussed on p.116-17.

Epigraphic, Numismatic and Literary Linkages

Sharma (1993:2) has suggested that carnelian beads were brought by traders from Kutch to Nagaland since ancient times. The custom of every Naga married woman to adorn themselves with carnelian beads is probably the strongest indicater of this exchange.

The northeast was not an isolated part of the subcontinent as revealed by our study. The influence of Gupta art form in the rock-cut images at Kamakhaya temple area, Suryapahar, Tejpur in Assam (Chauley 2007:8), and reference to rulers in the Davaka (Nowgong, Assam) and Kamrupa as *pratyanta nrpati* in the Allahabad inscription of Samudragupta (Sharma 1978: 15) indicates that the northeastern region was possibly within the fold of the Gangetic plains. In the post-Gupta phase Yasodharman of the Aulikara dynasty in Malwa carved out a vast Empire that included Lauhitya in the northeast to the western ocean and from Himalayas in the north to mountain Mahendra in the south (Choudhary1983: 135). The Mandsaur Pillar inscription of Yasodharman of Malwa (c.525-35 A.D) glorifies his *digvijaya* upto the Lohitya (Brahmaputra valley). This possibly indicates that movement of men and resources from the western most regions to the the northeast of the subcontinent. It is therefore not unlikely that the northeast accessed resources from west India.

The northeast on the whole flourished in the sixth century A.D. in the post-Gupta period. The sites that have been discussed above such as Dah Parvatiya in Tezpur,

Sekta in Manipur, and Unakoti in Tripura and so on have mostly yielded architectural remains of stupas and temples and sculptural representations in bronze, stone and terracotta. Most of these cultural evidences were heavily influenced by the Gupta art form. However the archaeological landscape is still hazy for the region. The artifactual repertoire of the entire northeast is limited and has been found from very few sites. Most of the sites do not yield anything more than architectural or sculptural remains. Resources such as copper iron and gold were locally available. The possible procurement of carnelian from the Kutch region in the west substantiates the fact that region was not an isolated entity and was part of the subcontinent as a whole.

Orissa

Archaeologically, the region is dotted with several Buddhist sites and a few early historic town sites. These include Sisupalgarh, Jaugada and Dhauli. Ratnagiri, Udayagiri, Lalitagiri stand out among the Buddhist sites which flourished during this period. Sporadic finds of artifacts and structural remains are nevertheless found at some places. Ruins of an old temple of seventh century A.D. are seen at Dhauli and Bankadagarh in Puri district (IAR 1962-3: 17; 1979-80: 55). The three sites in the Orissa region with post-Gupta cultural material are Manikapatna, and Mauza Behrampur. There are smaller sites which have cultural material from the post-Gupta period.

Sitewise Distribution of Manufactured Objects

Chart 10 c shows the raw materials used in this sub-region. They are bronze, iron, gold, silver, steatite and bone.

Evidence of Manufacture of Finished Products At Different Sites

Iron: Iron slag was found in the post-Gupta levels at Maraguda valley in the Nuapada district (ed. Basa and Mohanty 2000: 424).

Character of Sites and Distribution of Manufactured Objects

Manikapatna was an ancient sea port and yielded Roman amphorae from early historic levels. The site was in continuous occupation from the first century A.D. onwards (Pradhan, Mohanty and Mishra 1995-96: 121). From the layer of period I (second century BC to fifth-sixth century A.D.) thirteen terracotta ring wells were exposed. The excavation revealed the periphery of a habitation site along with numerous potsherds

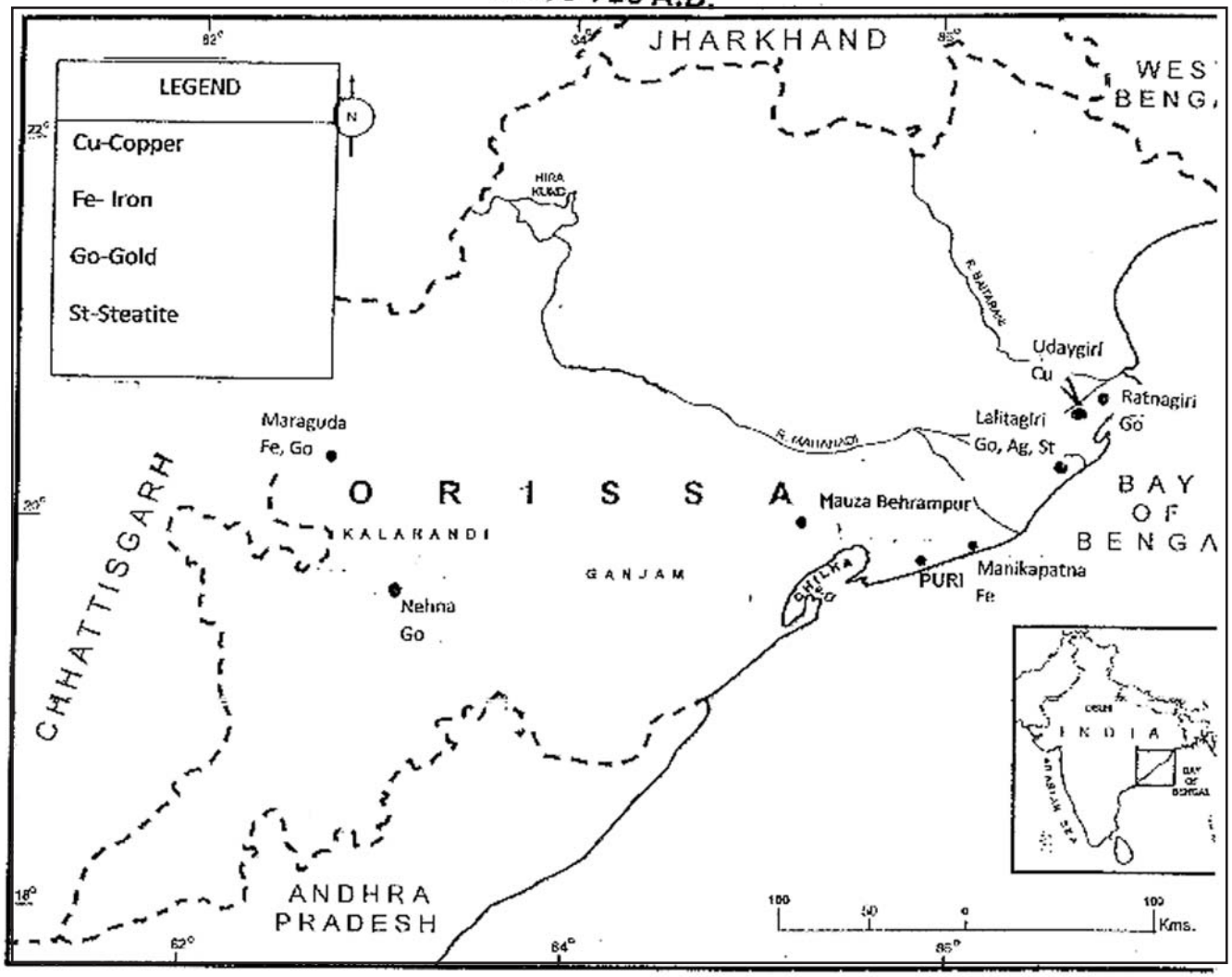
Chart 10c
Orissa—c.500—750 A.D.

Raw Materials	*Mauza Behrampur*	*Ratnagiri*	*Manikapatana*	*Nehna*	*Maraguda*	*Lalitagiri*	*Udaygiri*
Copper/Bronze							images
Iron			harpoon,spearhead, fishooks,beads		clamp, slag, beads		
Gold	necklace,pieces	bead,coin		coins, fanam	coins	casket	
Silver						casket	
Semi-Precious stone			unspecified beads				
Steatite						casket	

MAP-49

SITEWISE DISTRIBUTION OF RAW MATERIALS IN ORISSA

c. 500-750 A.D.



including knobbed ware (ed.Basa and Mohanty 2000: 480). At Dhauli in Puri district, the remains of an old temple of seventh century A.D. were found (IAR 1962-63: 17). Nehna in Kalahandi district yielded numismatic ezasvidence of several post-Gupta regional dynasties. These were the coins of Sarabhapuriya dynasty who ruled South Kosala from fifth to eighth century A.D. A copper plate inscription of this period was also recovered. Kalachuri coins and a gold *fanam* of the Ganga dynasty were also found (ed. Basa and Mohanty 2000: 421). Asurgarh in Phulbani district, a circular brick structure possibly belonging to a stage of temple construction of fifth-sixth century A.D. was found. It was surrounded by a moat and had gates on all four sides.

The most number of finds are from Manikapatna. Gold coins are reported from Nehna. Semi-precious stone beads were found from Manikapatna. Iron artifacts are in the form of harpoons, spearheads, fish hooks and beads were also found at the above site.

Among the smaller sites, a temple complex of sixth century A.D. was discovered in Bankadagarh in Puri district. The temple-complex was *panchayatana* in plan. A large number of sculptures were also discovered. The site was possibly the capital of the Sailodbhava dynasty (IAR 1979-80: 60). Budhigarh in Madanpur village has an extensive mound. The artifactual evidence from the site indicates that it was occupied from the early historic to the late medieval period (ed. Pal 2001: 20). Traces of brick walls were noticed during excavations at Budhigarh (Basa and Mohanty 2000: 423). A gold necklace and pieces have been found at Mauza Behrampur (Cuttack district) in this period. In Maraguda valley in Nuapada district, Kalachuri and Sarabhapuriya coins, beads and iron slag and clamps were found (ed. Basa and Mohanty 2000: 424). Sarabhapuriya coins were also found from the site of Komna, an important early historic site (Basa and Mohanty2000: 424).

Ratnagiri in Cuttack district stands out as a religious site of the region. Huien Tsang visited Orissa in c.639 A.D. and noted that Buddhism was in a flourishing condition. Excavations revealed an impressive stupa surrounded by an overwhelmingly large number of *stupas* of all dimensions, monasteries and smaller votive *stupas*. Buddhist establishments here dated from the fifth to the thirteenth century A.D. Ratnagiri did not flourish much till the seventh century A.D. This was partly due to the uncertain political situation owing to the fall of the Gupta dynasty (Mitra 1981:17). Taranath's

History of Buddhism (1608 AD) informs us that the monastery was built by Gupta king Narasimha Gupta Baladitya of early sixth century A.D. in the eastern kingdom of Odivisa (ed. Pal 2001: 28). The Mahavihara is identified on the basis of much sealing bearing the name *Ratnagiri Mahavihara*. Finds include relics of bones, and terracotta plaques and beads (ed. Pal 2001: 28, 43). The stupa seems to have undergone several phases of restoration. Remains of two quadrangular monasteries were traced at Ratnagiri (Chakrabarti 2006: 467).

Excavation at Udayagiri revealed two brick storeyed monasteries dated eighth to ninth century A.D. with a large courtyard. It was surrounded by cells where there is a massive stone sculpture of Buddha seated in *padmasana* (Chakrabarti 2006: 465). Remains of a gateway to the monastery were impressive and the figure of Buddha are major features. The gates were composed of three heavy rectangular blocks of stone. A good number of sculptures and architectural fragments with were unearthed at Udayagiri were dated to the eighth century (Bandopadhyay 2007: 5, 59). The Madhavapura monastery at Udayagiri is dated to the seventh-eighth century (ed. Basa and Mohanty 2000: 500). Lalitagiri was another well known Buddhist establishment of this period. Stone paved circumbulatory path and a fourfold relinquary was discovered on the east side. It contained caskets of different materials (ed. Pal 2001: 33). A large number of Buddhist sculptures, votive stupas and sculptural representation of the Buddha were also found. Terracotta seals and sealings and miniature figures of *Avalokiteshwara* and votive stupas were found as well (ed. Basa and Mohanty 2000: 450). Ceramics of fourth to sixth centuries A.D. were found including red polished and slipped ware, grey ware and black and red ware (ed. Basa and Mohanty 2000: 460).

The region is dotted with several Buddhist remains, many of them are reported from different parts. These are Balasore, Mayurbhanj, Jajpur, Phulbani, Jagatisinghpur, Cuttack, Khurda, Puri districts and so on (Bandhopadhya 2007: 10). Jayarampur in Balasore district in the sixth century revealed the remains of a Buddhist establishment which was reduced to a mound. From this a metal statue of Buddha, a stone image of a goddess and a copper plate inscription of sixth century were revealed (ed. Pal 2001: 28). From the accouts of Huien Tsang it was known

that another Buddhist centre of Pushpagiri existed in the Odra country. It has not been identified satisfactorily (ed. Pal 2001: 29). Other centres which saw extensive building activity in this period were Khadipada in Balasore district. It was near to the capital of the Bhaumakara rulers of Jajpur town. Buddhist images of stone, monastery made of stone blocks, and several other standing and monolithic figures were discovered (ed. Pal 2001: 31). During the rule of the Bhaumakaras flourished Solanpur known as the Salonapur monastery opposite Jajpur town. The mounds had several Buddhist structures and sculptures. The establishment was settled from an earlier period as; it was mentioned in the Ratnagiti copper plate charter of Somavasi ruler (ed. Pal 2001: 31). Other important Buddhist remains were found at Kulangiri, Rameshwar and so on (Chakrabarti 1998: 110-111).

The resource-use at the several Buddhist establishments was limited. Bronze images of Buddha were reported from Udaygiri. Iron was found in the form of harpoon, spearhead, beads, and clamp. Slag was found from Maraguda valley and Manikapatna. Precious metals as gold and silver were mostly found in form of coin and casket from Ratnagiri, Nehana, Lalitagiri and the latter from Lalitagiri. Silver casket was also found at Lalitagiri. Semi-precious stones beads were not reported from any other site except Manikapatna. However, the raw materials have not been specified. A steatite casket was reported from Lalitagiri.

Raw Materials Available Within The Sub-Region

The presence of gold and iron has been noted on p. 94 and 95.

Tin

Tin is available in Mundaguda- Mittiguda, Mohopodar, and SalimiVedur palli in Koraput district. Cassiterite mineralization is done in area around Mundaguda village in Koraput district (Babu 1994: 38).

Copper

Copper mineralizations occur at Mayurbhanj at Kesarpur, Dudhiasal and Madansahi and Sambalpur district at Adash. The chief mineral ore is pyrite, pyrhotite and chalopyrite (Wadia 1966: 128).

Lead

Lead occurs at Sargipalli deposit in Sundargarh district in Dhumholi area. The common primary minerals of the deposit are galena, chalcopyrite and sphalerite (Wadia 1966: 117).

Steatite

Good exposures of talc and steatite occur in south east of Mayurbhanj in Udala and Nilagiri in Balasore district, Kalimola and Gupteshwar in Koraput district. Medium quality steatite is found near Rebana in Kondujhar district (Behuria 1990: 76).

Raw Materials Available Outside The Sub-Region

No raw material was procured from outside the region.

Orissa in the post-Gupta period was a well spread out in habitation during the period. We have literary descriptions of flourishing sites such as Ratnagiri; the artifactual finds do not corroborate it. The architectural remains from several such Buddhist sites indicate a well established network throughout the region. The limited raw materials used were obtained from within the sub-region and no exchange network with other regions was required. The manufacturing industry is seen at a small site of Maraguda valley in the Nuapada district in form of iron slag. The exchange network displays a self-sufficient and closed economy in the post-Gupta period. However, the presence of regional dynasties of neighbouring regions is clearly evident. The recovery of a large number of coins of the Sarabhapuriya dynasty who were rulers of South Kosala region in this period is evidence of this. In this light, the region could never be understood as a closed unit, at least politically.

Gujarat

Gujarat has been of utmost importance for its proximity to the coastal region. Ports such as Barygaza have played a significant role in India's maritime trade with the west. In the period between the fifth and the eighth century A.D., one of the ruling dynasties here was that of Maitrikas of Valabhi. Huien Tsang describes the establishments at Valabhi and Saurashtra as rich and the people as "wealthy". He noted that rare and valuable products of different countries were stored here (*Book XI*, Beal, 2001- 266,269). The different sites in the region were Broach, Nagara,

Chart 11c

Gujarat—c. 500---750 A.D.

Raw Materials	*Broach*	*Nagara*	*Valabhi*	*Doodheres*	*Timbarva*	*Dwarka*	*Devnimori*	*Karvan*	*Hathab*
Copper/Bronze		finger ring, nails,lid, bowls, bar, rods,			antimony rods	Bronze bell	coins	coins	coins
Iron		objects,nails, knives,spear-head,dagger, arrowheads, chisel,spike			wire, nail, fragment of blade		arrowheads, scissors, hook, spearhead, rings, knives, daggers, sickle, door chain, chisel	nails, bolts	slags
Lead		ear studs						coins	
Gold			ring					bead	jewellery, Signet ring
Silver				coins					jewellery
Semi-Precious stone	jasper images	Chalcedony, Agate beads, Carnelian, Jasper beads						beads	Ruby, Diamond ring
Jade		beads							
Lapis Lazuli		beads							
Ordinary Stone		Sandstone querns,mullers, Granite quern, mullers,Chert beads			Quartzite quern				
Steatite/Soap-stone		steatite beads							
Shell/Conch	bangles	bangles, beads, dice, kohl sticks							jewellery

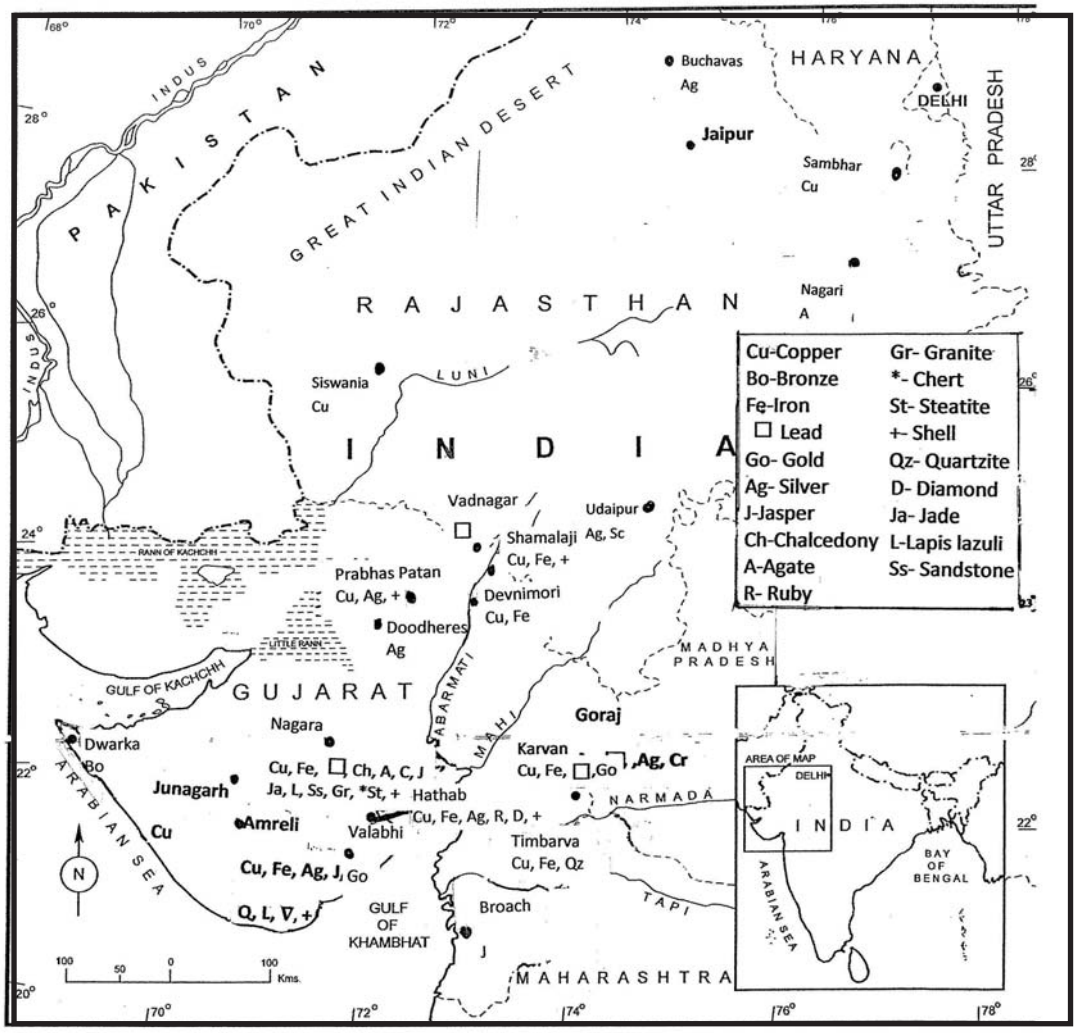
Chart 11c (continued)

Raw Materials	*Prabhas Patan*	*Shamalaji*	*Vadnagar*
Copper/ bronze	coins	bangles, antimony rods	
Iron		sickle	
Silver	coins		
Lead			coins
Ordinary stone		plaque	
Shell	carved bangles	dice	

MAP-50

SITEWISE DISTRIBUTION OF RAW MATERIALS

IN RAJASTHAN and GUJARAT c. 500-750 A.D.



Timbarva and Dwarka, Amreli and Doodheres (IAR 1959-60: 27; Mehta 1968; Mehta 1955; IAR 1962-63: 20; Rao 1966; IAR 1997-8: 214).

Sitewise Distribution Of Manufactured Objects

Chart 11c shows the different raw materials used in the post-Gupta period. These are copper, iron, lead, gold, silver, chalcedony, agate, carnelian, jasper, jade, lapis lazuli, sandstone, granite, steatite, shell, and bone.

Evidence of Manufacture of Finished Products At Different Sites

Chank: It was used at Nagara for producing numerous beads and ornaments. There were waste products of slices and stems of chank at all levels. These indicate a flourishing chank industry at Nagara (Mehta 1968: 130-2).

Iron: Slag was found on the surface of period III at Hathab in Bhavnagar district dated to the Maitraka period (IAR 2001-02: 48).

Character of Sites and Distribution of Manufactured Objects

Nagara in the Gulf of Cambay in the Kaira district was an important urban centre on the coastal plain. It participation in the westerly trade of India is evident from the find of Roman amphorae there (Mehta 1968: 17). Ghosh (1989: 298) observed that, after the eighth-ninth century the site began to shrink. The structural remains of the period comprised mud floorings, a wall of brick-bats and a large hearth (IAR 1963-64: 19). Timbarva in Baroda district was a town near the ancient township of Karvan. Pottery seems to be the only means of establishing chronology here. Pottery found in the post-Gupta period was painted red burnished ware with design in black over white background. On this basis the red slipped ware associated with the early medieval period has been dated to c.600-1000 A.D. No culture later than this period has been found here. It possibly indicated that the site was deserted by the end of tenth-eleventh centuries A.D (Mehta 1955: 3-4). Other antiquities include terracotta beads, iron nail, wire, antimony rod (Ghosh 1991: 440). Dwarka is one of the most important Vaishnava centres in India. The first clear historical reference is found in an inscription dated 574 A.D. which describes Dwarka as the capital of western coast of Saurashtra (Ansari and Mate 1966: 23). Pottery was mainly found in the excavations and the quantity was much more in Period III (c.7^{th}-8^{th} AD) than the early historical

periods. The antiquities include terracotta stoppers and tile pieces. The period has given evidence of successive superimposed stone structures (Ghosh 1991: 133). Excavation exposed a lapse of a few centuries between the early historical period and the later stage dated to the seventh century A.D. Fragments of wall-moulding and finials were found in this stratum (IAR 1962-63: 20). Vadnagar in Mehsana district revealed in excavations a continuous sequence of three periods from c. 200 BC to 1000AD. Stratum II dated c. 200-600 A.D. yielded red polished ware (Patel and Rajesh 2006-07: 94). Period III dated c. 600-1000A.D yielded a distinctive coarse red slipped ware painted with black designs (Ghosh 1991: 456). Amreli in Saurashtra revealed occupational deposits from first century BC to eighth century AD. A seal of Siladitya has been found here (Rao 1966: 11; Ghosh 1991: 19). As reported by Patel and Rajesh (2006-07: 90), Amreli yielded the highest number of red polished ware from early historic period levels dated from the first to seventh centuries A.D. Hathab in Bhavnagar district yielded material evidence of the existence of a buried city datable from the fourth century B.C to sixth century A.D. Period III here was dated to the Maitraka period. It yielded slags, terracotta figurines, domestic utensils, coins and other antiquities. A gold signet ring was a significant discovery (IAR 2001-02: 48).

The religious sites in the region are many. Devnimori in the Sabarkantha district was the site of a large Buddhist establishment with a stupa and monastery. The stupa in the later stage of occupation dated to early late-Kshatrapa-early Gupta period was in a dilapidated condition. The second phase of the stupa was marked by haphazard restoration of walls. Similarly in the monastery, the last phase was one of deterioration; the use of broken bricks was common. However, other structures exposed were dated till about the sixth century A.D (IAR 1959-60: 29). A number of Indo-Sassanian coins were recovered from Devnimori (Patel and Rajesh 2006-07: 90). Valabhi was the famous capital of the Maitrikas who ruled here following the Gupta rule. The excavations revealed a continuous habitation deposit from the early historical period to the seventh-eighth centuries A.D without a break. A few sherds of black and red ware encountered from the disturbed trenches at the lower levels of Period II. A mud rampart was also found provided with heavy brick revetments. Terracotta objects such as flesh dabbers, beads and a *chaturmukha linga* of sixth-seventh centuries A.D were some of the antiquities found in this layer. There was possibly a break from the previous period to the medieval period (IAR 1959-60: 27). An old monastery

associated with the name of Bhattaraka, the feudatory of the Maitraka rulers is mentioned in their grants dated c. 567 A.D. Small Buddha heads and images, terracotta tablets called '*Dharmagutikas*' inscribed on them are found at Valabhi (Dutt 1988: 224). Prabhas Patan in Sorath district had occupational deposits upto the Kshatrapa-Gupta levels. The mounds were abandoned after that except for one used as a medieval temple (IAR 1956-57: 21). Period V is assigned to first century B.C to sixth century A.D here. Red polished ware was reported here (Patel and Rajesh 2006-07: 93).

The small sites of the period include Doodheres in Surendranagar district. Silver coins of Valabhi rulers of sixth-seventh centuries A.D were found here (IAR 1997-8: 214). Tarsang in district Panch Mahals had layers dated from early centuries of Christian era to medieval times. The antiquities have not been elaborated (IAR 1977-78: 29). Karwan in Vadodara district itself yielded copper coins of Kshatrapa and Maitraka rulers and red polished ware. The site was inhabited from second century to eighth century A.D (Patel and Rajesh 2006-07: 92; IAR 1974-75: 23). A terracotta seal inscribed in Brahmi characters on stone was found dated to the seventh-eighth century A.D (IAR 1975-76: 22). Shamjaji in Sabarkantha district had stratum III dated to c. 400-1000 A.D. The site exposed hearths and structures of this period along with other antiquities (Patel and Rajesh 2006-07: 93). The Saurashtra-Kathiawar peninsula has remains of early temples of sixth-seventh centuries A.D. About one hundred of them are known and have small structures with few decorations. One such temple is the old Siva temple of Gop dated mid-sixth century A.D which stands on high platform and has an undecorated doorway (Chakrabarti 2006: 462). Champaner in Panchmahal district had an antiquity from the early historical period. Copper plate inscription of Maitraka ruler Dhruvasena II (653 AD) and silver coins are found from here. No structural remains are reported from this period (Sonawane 2009: 69).

The resource usage is vast and impressive mainly at Nagara in Kaira district. Copper artifacts are quite a few in numbers. They are nails, bowls, lids, rods, finger ring and bar. Similarly iron artifacts are also substantial. They are in the form of nails, knives, daggers, spearheads, arrowhead, chisel and spikes. Lead ear studs are found at Nagara. Whereas gold and silver has not been used at all. Lapis lazuli beads are found at Nagara. The other beads of semi-precious stones are in different materials. They are

chalcedony, jasper, carnelian, agate and jade. The use of ordinary stones such as sandstone and granite are in the form of mullers and querns. Steatite beads are also found only at this site. Shell bangles, beads and kohl sticks are the other artifacts from Nagara. The other urban areas show a very poor artifactual yield. Broach has produced artifacts such as jasper images and at Valabhi we find the only gold article in the form of a ring. Doodheres and Champaner have yielded silver coins.

Raw Materials Available Within The Sub-Region

The presence of semi-precious stone and shell has already been noted. (p. 116-17).

Jasper

Jaspers could come from the village of Tankara in Morvi about twenty miles north of Rajkot. (Ball 1881: 509)

Iron

Low grade iron laterite iron-ore occurs as small pallets and nuggets northwest of Char and to south of Narmada river. Trap flows are noticed at about two kilometers northwest of Chhelana in Amreli district (Patel 1972: 16).

Jamnagar district: Iron-ore also occurs at Mota, Asota, Khambalia, Modpar and Ranpar in the (Patel 1970: 31).

Kutch district: Ferruginous laterites containing 20-40% iron-ore occurs in Bhachau, Lunwas, Dudhai and Matano Madh in Kutch district (Patel 1971: 25).

Copper

Rupwati mine in Kathiawar has native copper. Oxide minerals of copper were used at the site of Rangpur during 1800 B.C. (Biswas 1996:325). Copper ore occurs at Banaskantha district (Wadia 1966: 127).

Gold

The presence of gold has already been discussed on p.116.

Galena

It is noticed in two small lenses of quartz occurring near Brahmapuri in Sabarkantha district (Rajyagor 1974: 18).

Steatite

Asbestos and steatite are found in Aravalli metasediments. The main occurrences are at Kundol valley at Devnimori, Isri and Kundol (Rajyagor 1974: 18).

Sandstone

Lahiri (1992:107) has noted the occurrence of granite-gnesis and sansstone in Rajkot, Junagarh, Panchmahals and Surendranagar districts.

Sabarkantha district: Himatnagar sandstone is an important deposit. Sandstone quaries are located in Parbada, Ilol, Berna, Kanknol, Bhetali, Malsa and Vadali in the district (Rajyagor 1974:19).

Raw Materials Available Outside The Sub-Region

The presence of silver and lead (Rajasthan), and lapis lazuli (Afghanistan) and Jade (Turkestan) has already been noted. (p., 109, 31)

KARNATAKA

Ruby

Ruby and sapphire corundum is common occurrence in Karnataka and is explored near Budipadya in Mysore district, Mandya, Tumkur district. Kadamane and Melkoppa near Sringeri in Chikmagalur district also have these stones (Radhakrishnan 1996: 205).

CENTRAL INDIA

Diamond

Diamond bearing areas in Central India are, Panna, Charkhari, Bijawar, Ajoygarh, Kothi, Pathar, Kachar, barunda and Chobepur areas in the Gondwana rocks (Banerjee 1992: 379).

Epigraphic, Numismatic and Literary Linkages

The link between Gujarat and Karnataka can be establish on the basis of the Aihole inscription of Pulakesin II (c. 609-610 A.D) of the Chalukya dynasty (rulers in the Karnataka region) records his military conquests. As a corroboration of this observation, several inscriptions of early Chalukya rulers have been found throughout Maharashtra, Gujarat, Andhra as well as Tamil Nadu. The inscriptions from Gujarat

include, Kaira grant of Vijayaraya, Navasari plates of Yuvaraj Siladitya which refers to Vikramaditya, Navasari grant of Pulakesin II, Surat plates of Siladitya and Balsar copper plates of Mangalarasa (eds. Krishnappa and Gopal 2000: 36). At the same time, inscriptions such as the Eran stone inscription of Toramana and Gwalior stone inscription of Mihirkula firmly attest the rule of the Huna rulers in the central India region (Pandey 1962: 141). A reference in the *Rajatarangini* by Kalhana glorifies the victory of Mihirkula over the rulers of Cola, Karnata and Lata which is south Gujarat (Pandit (1935: 41). The Mansaur inscription of Yasodharman further clarifies that the Huns held a vast area like the Gupta rulers (Biswas 1973: 77). It is therefore likely that the Hunas controlled a vast part of central India that included the Gujarat region. The accounts of Huien Tsang confirm that raw materials from distant regions reached places like Valabhi, Saurashtra and Gurjjara. He observes that, the population of these cities was dense and the establishments rich. The rare and valuable products of distant regions are stored here in great quantities (Bk XI; Beal 2001 reprint: 266, 269, and 270). In the light of these evidences it would be very likely for the region of Gujarat to be in touch with both central India and Karnataka for procurement of resources.

The signs of a prosperous economy were visible from the urban site of Nagara in Gujarat in this period. The site has a rich artifactual yield and the resource usage was also varied. Chank artifacts were manufactured locally. Hathab had evidence of iron smelting. The resources available within the region were gold, jasper, agate, chalcedony, carnelian, copper, sandstone, granite and shell. Resources were procured from different and distant lands. The findspots of Huna coins include Hidda in Afghanistan, Taxila, and Shah-ji-ki-Dheri in NWFP (Biswas 1973: 200-03) and Mihirkula's Gwalior inscription and Eran Stone inscription of Toramana (ed.Sircar 1965: 420, 424) establish the authority of the Hunas up to central India. The procurement of lapis lazuli from Afghanistan in this period was thus a strong possibility. The raw materials such as silver and lead were obtained from neighbouring Rajasthan. Central India was the nearest source for diamond while gemstones such as ruby that were available in the Karnataka region in southern Deccan. The exchange network of Gujarat in the given period was possibly quite wide. Urban sites such as Nagara, Dwarka, Amreli, Devnimori, Timbarva and Prabhas Patan are common. The smaller settlements were not reported in large numbers. Over all, there are indications of a thriving settlement pattern in the post-Gupta period in this region.

Rajasthan

The region was ruled by the Gurjara rulers in the mid-sixth century A.D. Their capital was Mandor and subsequently Morta near Jodhpur. In east Rajasthan, the Guhilots of Mewar were ruling around Udaipur. The dynasty became powerful by the eighth century A.D (Chakrabarti 2006: 425). The archaeological yield from the region in the post-Gupta period is not widespread. The habitations of this period are very scanty. The different sites with the remains of this period are, Nagari, Buchawas, Siswania, Udaipur and Diatra.

Sitewise Distribution Of Manufactured Objects

Chart 12c shows the different raw materials used in the post-Gupta period. These are copper, silver, agate and schist.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture has been noted in this region.

Character of Sites and Distribution of Manufactured Objects

Nagari is the only urban site of this region. It was the ancient *Madhyamika* and was the capital of the Indo-Greek king Menander. A fortification wall of the Gupta period has been found (Chakrabarti 1995: 221). A citadel dated to the Gupta period was found and two structures of Mahadeva temple were found. One dated to the pre-Christian era and the other Hathi Bada mound was dated c. 700 A.D were unearthed (Bhandarkar 1998: 118-19). Agate beads are reported from Nagari.

The site of Sambhar or ancient Sakambhari was the capital of the Chahamana princes in medieval period. This town was founded about third century B.C and continued to flourish until the tenth century A.D (Sahni 1999 reprint: 73). The excavation exposed structures that range from the third-second centuries BC to tenth century A.D. No details of these structures are found in the excavation report by Sahni (1999 reprint) (Chakrabarti 1997: 221). Copper coins of late Indo-Sassanian period were found at Sambhar (Sahni 1999: 65). Also, Huna coins in copper and silver have been reported from here (Hooja 2006: 144). Bairat, the traditional site of the capital of Virata of *Mahabharata* fame was a bustling town of the early centuries A.D. However, the later history is not very clear and no objects of second century A.D or later date was found. The site was destroyed by the Huna invaders in the fifth-sixth century A.D (Sahni 1905-

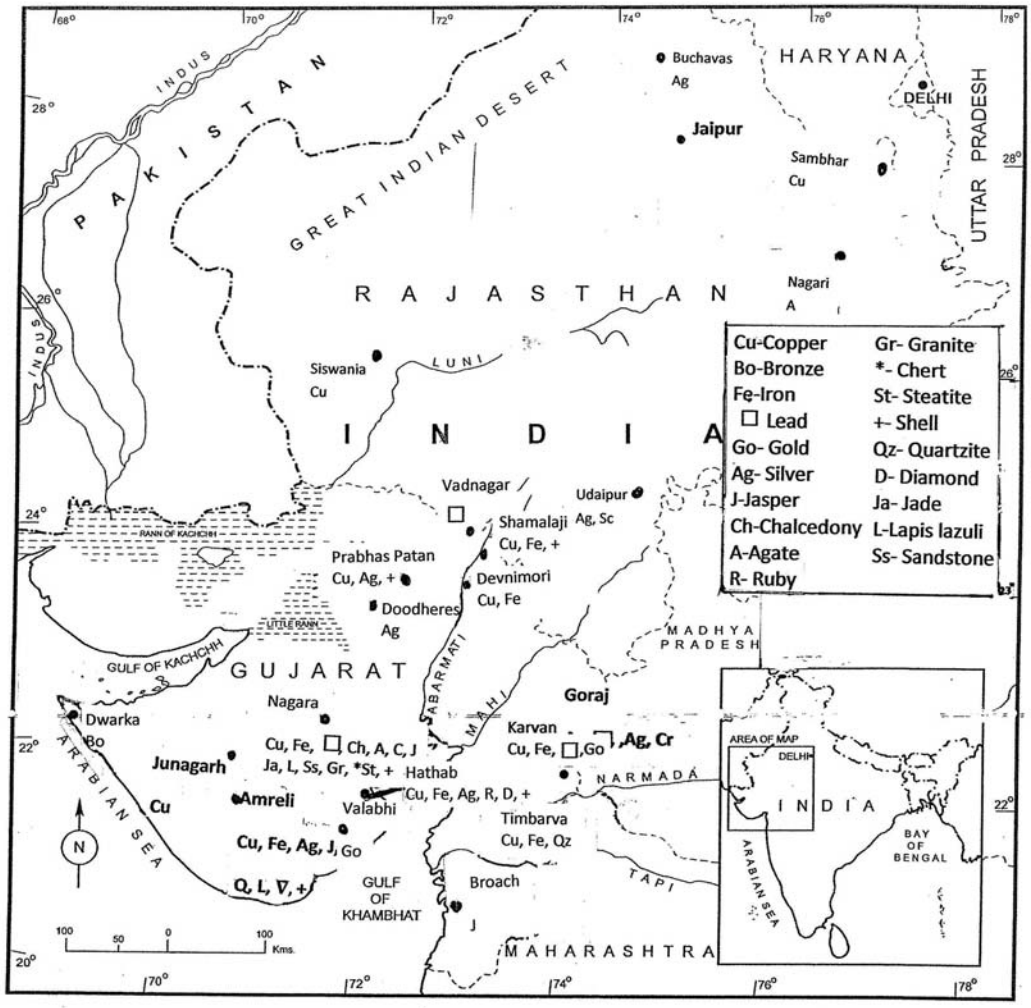
Chart 12c
Rajasthan—c. 500—750 A.D.

Raw Materials	*Udaipur*	*Diatra*	*Buchawas*	*Siwana*	*Nagari*	*Sambhar*	*Kasindra*
Copper/Bronze				Gadhaiya coin		Gadhaiya coins Silver	coins alloyed alloyed with
Silver	coin	Gadhaiya coins	Gadhaiya coins				
Semi-Precious stone					Agate bead		
Ordinary Stones	Schist sculptures						

MAP-51

SITEWISE DISTRIBUTION OF RAW MATERIALS

IN RAJASTHAN and GUJARAT c. 500-750 A.D.



06: 85-86). The excavation revealed a gap of a few centuries between period III and Period IV at Bairat. Whereas period III related to early centuries of the Christian era, period IV was designated a medieval on the basis of glazed ware found (IAR 1962-63: 31). Late Gupta sculptures were reported in explorations at Nithar and Pangore in Bharatpur district (IAR 1963-64: 28). Besides S.K. Chakrobarty (2004: 64) has reported the find of imitation of Gupta silver coins by Krishnaraja of Kalachuri dynasty from a vast area in the north and Deccan. These sixth century A.D coins were reported from Rajasthan and Malwa regions. V.N. Mishra (2007: 313) observes that the early historic urban centres after the Gupta period. There is little post-Kushana occupation at Rairh, Nagari, Noh, Jodhpura and Sunari. It is only at Nagar and Sambhar that occupation appears to have continued till the tenth century A.D.

The small settlements are Udaipur, Buchawas, Siswania and Diatra. Indo-Sassanian coins (*Gadhaiya*) copper and silver coins have been reported from Buchawas, Diatra and Siswania. Udaipur has yielded only schist sculptures. At Noh in Bharatpur district, period V was described as “age of poverty and decadence”. The stratum is assigned to seventh-eighth century A.D. Numerous pits were found all over the occupation. These yielded a number of stone plaques and a palm size Buddha or Yaksa figure in white spotted red sandstone (IAR 1963-64: 29). Reema Hooja (2006: 144) has reported the find of Huna coins from small sites in Rajasthan. These were, Jalor, Nagaur, Chotan, Abaneri, Khoh, Ranivavan, Kherjroli, Losal, Desurri, Sardargarh, and Piplaj, Junakhera near Jhalawar. Other sites were in the area of Marwar, Mewar, Kota and Jaipur. Kasindhra in Sirohi district yielded coin hoard of alloy of copper and silver coins (Hooja 2006: 145). Exploration yielded sculptures of early medieval period from Ageri and Jagar in Sawai-Madhopur district and from Varmana in Sirohi district (IAR 1962-63: 31). An ancient embankment and mud ruins of an early medieval temple and sculptures were recovered from Pandoli in Chittorgarh district (IAR 1982-83: 66-67). The site of Indaracharanan in Pali district yielded early medieval remains, inscriptions and sati stone (IAR 1982-83: 70). Chakrabarti (2006: 462) has reported a few early medieval temples from the region. The Sitaleshwara temple at Chandrabhage, Jhalawar is one such dated to the seventh century A.D. A famous temple complex occurs near Osia near Jodhpur dating from the eighth century. It stands on high platforms and narrow pillared porches.

Raw Materials Available Within The Sub-Region

The presence of copper, silver, has been noted on p. 30 and 109.

Schist

In the northwest of Heerawas in Sikar district a few bands of schists exist (Agarwal 1978: 11).

Agate

Chalcedony and agate are found scattered on the surface as secondary deposits associated to the Deccan Trap. Such minerals are found in a good quantity from the Bakani area in Jhalawar district (Dhoundiyal 1964: 12).

Sandstone

Red sandstone comes from Dalmera in Bikaner state. Dholpur and several places in Jodhpur have deposits where different coloured varieties of sandstone are found. Famous quarries of sandstone are found at Bansi and Paharpur in the Bharatpur state (Erskine 1908: 53-54).

Raw Materials Available Outside The Sub-Region

No raw materials seem to have been procured from outside the sub-region.

We do not get sufficient information regarding the post-Gupta period settlements in Rajasthan. The artifactual yield is meager with the exception of coins. Whatever sites have been reported are small settlements with stray finds. The archaeological finds from urban sites such as Rairh, Bairat, Sambhar and Nagari are not adequately reported. It could be inferred that the habitation in this period was either shrinking or the shortfall in artifactual yield could be attributed to lack of proper exploration and documentation.

However, inscriptional data seems to be rich in this region. We find several inscriptions of the different regional dynasties ruling in this period from different parts of Rajasthan. A fragmentary inscription of Yasodharman of Malwa from Chittorgarh indicates that he extended his rule in the Rajasthan region (Hooja 2006: 144). The inscription of Guhila rulers from Nagar (Malava-Nagar) dated c. 684 A.D record the building of a step well at Nagar by a Guhila chief Dhanika (Hooja 2006: 152). Inscriptions of Guhilas have been found from Chatsu area, south of Jaipur, The

Samoli inscription of c. 646 A.D mention Guhila control over Sirohi-Mewar border area. Another branch of the Guhila rulers were ruling over Kiskindha (modern Kalyanpur) south of Udaipur. Their inscriptions of seventh-eighth centuries A.D have feudatory titles used by chiefs owing allegiance to Harshavardhana of Thaneshwar (Hooja 2006: 159). The epigraphic evidence from the region certainly indicates socio-political dynamism in the Rajasthan region in the post-Gupta period.

Maharashtra

The region had a well spread out megalithic culture in the earlier periods. The early historic period (c.2nd B.C. - 6th A.D) is marked by the flourishing of Buddhist sites such as Bhaja, Karle and Kanheri. Rock-cut caves are distributed all over the Deccan from Saurashtra to north Kanara linking the coast to the interior regional locations (Chakrabarti, 1995: 199). However, material evidence for the post-Gupta period are known from few sites only. They are Kaundinyapura, Paunar, Bhokardan, Kanheri, Mansar, Prakash Hamalapuri and Thana (Dikshit 1968; Dhavalikar 1968; Deo 1974; IAR 1969-70: 22; 1994-95: 71; 1997-98: 129; Thapar, Athavale, Ramesh, Rao and Shashi 1964-65: 8-129; 1982-83:131).

Sitewise Distribution Of Manufactured Objects

Chart 13c shows the raw materials used in this region. They are copper, bronze, silver, carnelian, quartz, rock crystal, and coral.

Evidence of Manufacture of Finished Products At Different Sites

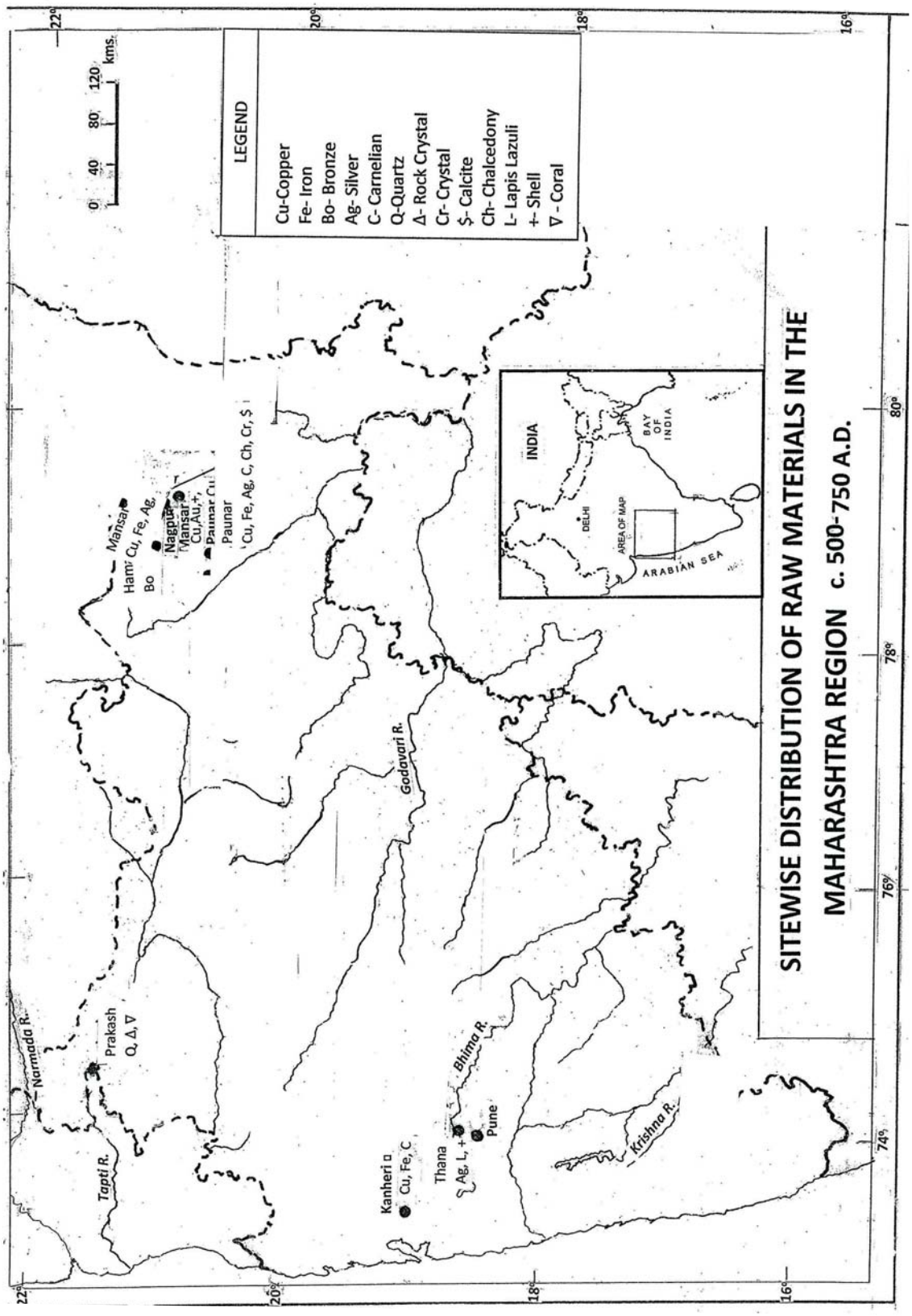
Iron Ore: Furnaces, crucibles and slag in large numbers dated to the fifth century A.D was found in the Buddhist monasteries at Kanheri. It was probably used by monks for fashioning metal objects (IAR 1969-70: 22). Quite a number of iron objects and a large lump of iron slag were found at Paithan in Aurangabad district in the foundation of the stratum dated sixth to eighth century A.D (IAR 1965-66:29).

Bead making: The collection of a large amount of beads from Paunar in Period III (c. 3rd-8th AD) shows that it was possibly a bead making site. It has been observed by Dhavalikar (1968: 78) that the site received non-local bead materials like lapis and coral in this period.

Chart 13c
Maharashtra—c. 500—750 A.D.

Raw Materials	*Kanheri*	*Hamalapuri*	*Prakash*	*Thana*	*Paunar*	*Mansar*
Copper/Bronze	disc	Bronze images			fingerings, rattle,rod,	beads, pendants, earrings, studs, trinklets
Iron	slag				nails, blade fragments, chisels, sikle, spearheads, arrowheads,bangle,hooks, clamp	arrowheads, nails,chains, fishplates, spatula,axes needles,hoes, handles,rods points,chisel,
Silver				Gadhaiya Coins	coins, coin hoard	beads,pend-ants,studs, ear studs, trinklets
Semi-Precious stone	Carnelian beads		Quartz, Rock Crystal beads		Carnelian, Chalcedony beads, Crystal, Calcite beads	beads, earstuds, Shivalinga,
Ordinary Stones						grinders
Lapis lazuli				bead		
Shell/Coral			Coral bead	bangles, rod, mirror handle		

MAP-52


SITEWISE DISTRIBUTION OF RAW MATERIALS IN THE
MAHARASHTRA REGION c. 500-750 A.D.
LEGEND
Cu-Copper
Fe- Iron
Bo- Bronze
Ag- Silver
C- Carnelian
Q-Quartz
Δ- Rock Crystal
Cr- Crystal
$- Calcite
Ch- Chalcedony
L- Lapis Lazuli
+- Shell
∇ - Coral
0 40 80 120 kms.
INDIA
DELHI
AREA OF MAP
ARABIAN SEA
BAY OF INDIA
Narmada R.
Tapti R.
Godavari R.
Bhima R.
Krishna R.
Prakash
Q, Δ, ∇
Kanheri □
Cu, Fe, C
Thana
Ag, L, +
Pune
Nagpur
Mansar
Cu, Au, +,
Paunar
Cu, Fe, Ag, C, Ch, Cr, $
Mansar
Cu, Fe, Ag,
Bo
22°
20°
18°
16°
74°
76°
78°
80°

Shell: A number of shell bangles and waste pieces of columella from period III at Paunar indicate that it was a flourishing local industry for manufacture of shell object (Dhavalikar 1968: 99).

Character of Sites and Distribution of Manufactured Objects

There are quite a few urban sites in the region. Prakash was a chalcolithic site in the early times and flourished during the Mauryan times but the later periods were on a modest scale. The resource-use at this site is minimal. The structural buildings of the Gupta and post-Gupta period belonging to period IV (c.6th-11 A.D) were in a dilapidated state. The artifacts are beads of quartz, rock-crystal, carnelian and coral (Thapar, Athavale, Ramesh, Rao and Shashi 1964-65: 24). Kaundanpur (Dikshit 1968) on the bank of the Wardha or ancient Kaudinyapura was the traditional capital of Vidarbha. The excavations yielded a sequence from the megalithic to the Muslim periods (Chakrabarti 1997: 229). Clay roof tiles of the early historic period were found at the site. No information is available beyond the fourth century A.D (Smith 2000: 81). Bhokardan or ancient Bhogavardhana in Amaravati district did not yield much structural data (Chakrabarti 1997: 230). The territory seems to have been held by early Kalachuri rulers of Mahismati. A Kalachuri inscription of 539 A.D found here mentions some land donated in the *visaya* Bhokardana (Deo 1974: 4-5). Terracotta objects, figurines and plaques from Period II (3rd c A.D onwards) and sandstone plaques depict non-secular motifs like the *Lajjagauri* and sculptures of Siva or possibly Bodhisattava. Deo (1974: 215) observes that the revival of Brahmanical cults in the Gupta and post-Gupta period at Bhokardan is evidenced by the Brahmanical caves and these plaques and sculptures. Paunar in the Wardha district has been identified with ancient Pravarapura, the capital of the Vakatakas. They ruled from the third to the sixth centuries A.D. The habitation here has been dated from the first millennium BC to the medieval period (Dhavalikar 1968: 7). The stratum of period III dated third to the eighth century A.D as the Vakataka, Vishnukundin and Kalachuri period. The habitation of period III is characterized by well planned foundations. Excavation exposed brick structures, and several other structural remains. The use of bricks, brickbats, construction of ring wells and floors of compact clay were unearthed. Vishnukundin coins, beads, red polished pottery, terracotta objects and stone sculptures were also found (Dhavalikar 1968: 6-7). It has been observed by Dhavalikar (1968: 49) that period III dated c.3rd to 8th A.D was the most prosperous at this site. As such, the

largest number of antiquities of varied nature were found from this period of occupation. Evidence of manufacturing in bead and shell has also been noted. One bead of lapis lazuli has been found in surface collection. Rest of such beads was found at late Satavahana, early historic and early medieval period (Dhavalikar 1968: 85). The site of Paithan in Aurangabad district in period III (dated c. 600-800 A.D) exposed a portion of a brick temple in ruined condition. The plinth was built of exceptionally large sized bricks. The temple was possibly of the Rashtrakuta period (IAR 1965-66: 29).

The religious site of the region was Kanheri, an important centre for Buddhism. It is known for the well distributed rock-cut caves. There is evidence of manufacture of metal objects by the monks in the post-Gupta period in the form of slag, furnaces and crucibles. The majority of these caves consist of a small single room with a small verandah in front. The architecture is dated as late as 8^{th}-9^{th} centuries A.D (Kapoor 2002: 341). A copper disc has been reported from Kanheri (IAR 1969-70: 22). Pauni in Bhandara district was a stupa site on the Jagannath Tekdi mound. The rampart showed evidence of habitation prior to the medieval period. Several stone pillars show that Pauni was inhabitated from pre-Maurya to late medieval periods. Copper plate grants of Vakataka rulers were found at the site dated from c.3^{rd} to 6^{th} A.D (Deo and Joshi 1972: 5-8). In explorations in district Aurangabad, at the site of the Balaghat hill, near the Daulatabad fort was found rock-cut caves which were possibly used as a shrine. A fine sculpture of Lakulisa was found there along with other figurines of dvarpala and Parvati. The attributes, dress, ornaments of the Saiva dvarpalas show strong Pallava and Chalukya influence and could be dated sixth-seventh century A.D. Several Mahisamurti figures were also noticed in the Ellora caves dated sixth to eighth centuries A.D (IAR 1989-90: 56-57). Mansar in Nagpur district yielded important numismatic data in excavations. The coins ranged from the Kshatrapa, Vakatakas to Indo-Sassanian coins. There were a number of sculptured objects from the porch and shrine floors. They were mainly Uma-Maheshwar, Lajjagauri and plaques depicting religious signs. On the basis of numismatic data, the site has been tentatively dated between c. 300-650 AD (IAR 1994-95: 57). The Ajanta rock-cut caves in the Aurangabad district built in the Vakataka period are world famous mural paintings of Buddhist creed. The fifth-sixth centuries A.D witnessed plentiful structural activities. The latter period saw a profusion of Buddha figures on the façade and the interior of the *chaitya* hall (Mitra 1956: 4-6). Chandor in south Goa district revealed remains of a brick

structure of early historical period. From the later centuries, a trench near the retaining wall yielded good evidence in form of tiles, bricks and pottery at a temple site dating back to the seventh century AD (IAR 2001-02: 30).

The second tier of settlements in the region includes Hamalapuri (district Nagpur), and Thana. Here the artifacts are bronze Images and silver *Gadhaiya* coins. Excavations exposed caves and the pillars in the front at Banotiwadi in district Aurangabad. These were known as Dharkund caves comprising main hall with two sub shrines and an incomplete *pradakshina patha*. The pillars are contemporary with Ajanta/Ellora Buddhist caves. Architecturally it represents the transitional phase of architecture in western India between the Vakatakas and the Chalukyas between mid fifth to the mid sixth century A.D (IAR 1989-90: 55-56).

Raw Materials Available Within The Sub-Region

Copper

The presence of copper has been noted on p. 124.

Iron

The presene of iron has been noted on p.125.

Semi-Precious stones

Dark coloured volcanic lava of the Deccan Trap contains a variety of secondary minerals like agate, jasper and chalcedony. These occupy the lower portion of the ridges. Agate and chalcedony is reported trappean portion of the Nagpur district (*Maharashtra District Gazt.* Kolaba 1964: 13; 1966: 14). A large part of the Parbhani district is occupied by rocks similar to the Deccan Trap formations. The amygdales are filled with secondary minerals of zeolite group as calcite, chalcedony, agate, onyx and carnelian and rock-crystal (Maharashtra State Gazt. Parbhani, 1967: 20; Jalgaon1962: 9).

Raw Materials Available Outside the Sub-Region

AFGHANISTAN

Lapis Lazuli

Its availability has been noted on p.31.

Epigraphic, Literary and Numismatic Linkages

The Vishnukundin dynasty who ruled from fourth century A.D onwards were the feudatories of the Vakatakas in central and eastern Deccan. The structural and archaeological data of Vishnukundin layers of habitation come from Amaravati, Nagarjunakonda and Peddavegi excavations (Sarma 2008: 50-51). Vishnukundin coins have also been found in excavations near Nagpur and a hoard of alloyed copper coins from Paunar near Wardha district and Nagar in the Bhandara district of Vidarbha. Mirashi (1975: 185) has also noted such coins at Nevasa in western Maharashtra. Mirashi opined that the Vishnukundin King Madhavavarman I conquered Dakshin Koshala, Vidarbha and Maharashtra. Dandin's *Dasakumarcharita* has described the help extended by Madhavavarman I to the last Vakataka king Harisen's son in the wake of the death of Harisen at the hands of the ruler of Banavasi (Mirashi 1975: 185). A copper plate grant of Madhavavarman I is also found at Khanapur in Satara district (Mirashi 1975: 185). Hence the central Deccan region covering parts of Maharashtra and Andhra were possibly within the domain of Vishnukundin rulers. An exchange of resources is not improbable.

Maharashtra in the post-Gupta period was a prosperous region. The number of sites with stratified levels for the period were mostly urban in nature. These sites were formerly the large urban sites in the region. The artifactual repertoire from this period levels are most notable at Paunar and Mansar. Structural and numismatic evidence is seen in abundance at several sites. We find manufacturing activities in the region at Kanheri, Paithan and Paunar, all urban-religious sites. The resource procurement was possibly done within the western region of the subcontinent. A few resources such as copper, iron, bone, shell, agate, jasper, carnelian, rock-crystal and chalcedony were available within the region. Resources such as silver were possibly procured from Andhra to its east and lapis lazuli from Afghanistan. The evidence of wide ranging exchange activity is known from epigraphs of the preceding periods. According to H.P. Ray, the single largest group of donors at Kanheri upto the fourth century A.D comprised *negama* (merchants), *vanija* (trader), *suvarnakara* (goldsmith) and *herenika* (treasurer) (Olivelle, 2006: 127). This exchange pattern, though on a limited scale was also possibly present in the post-Gupta period.

Central India

The Malwa plateau situated on the ancient lines of communication, and had a well established historical phase, from Mauryan to Gupta times. The post-Gupta settlements in the region are well represented. Ujjain was one of the most flourishing trade centres in ancient times. It has been described as an affluent urban city by Kalidasa in his works *Meghdutam* and *Ritusamhara*. The splendor and opulence of Ujjain are reflected in the poet's writings (Chandra Rajan 1990:78). The description of Ujjain by Huien Tsang substantiates Kalidasa's description. It is described by the Chinese traveler as a densely populated city with wealthy establishments (Book XI, Beal 2001: 270). Kosala was also significant and served an an important link between north and the Deccan region. The different sites are Kayatha, Besnagar, Malhar, Pagara, Tumain, Gilaurikhera, Sanchi, Ujjain and Sirpur (Ansari and Dhavalikar 1975; IAR 1964-65; Sharma and Mishra 2003; Chakrabarti 1997; Marshall 1955; Sharma and Joshi 1999-2000).

Sitewise Distribution of Manufactured Objects

Chart 14 c shows the different raw materials used in the region. These are copper, iron, quartz, carnelian, schist, basalt, sandstone, soapstone, shell, bone and ivory.

Evidence of Manufacture of Finished Products At Different Sites

In the post-Gupta period layers at Gilaurikhera, a hearth at the depth of 71 cm in a southern portion of a trench was an evidence of manufacturing activity of this period (Sharma and Mishra 2003: 110).

Iron: A workshop was revealed from a brick built room during excavations at Pachrahi (Yadav and Pradhan 2008: 56).

Bead Making: A small trench beside the Siva temple at Indragarh in Mandsaur district exposed fluted cores, flakes and blades of jasper, agate and chalcedony associated with pottery. It indicates that the site was a bead-making factory at some stage (Sharma and Mishra 2003: 184). A workshop of bead manufacturing was found in excavations at Pachrahi in Chattisgarh region. Several finished and unfinished beads, waste materials and working area of craft activity were reported (Yadav and Pradhan 2008: 56).

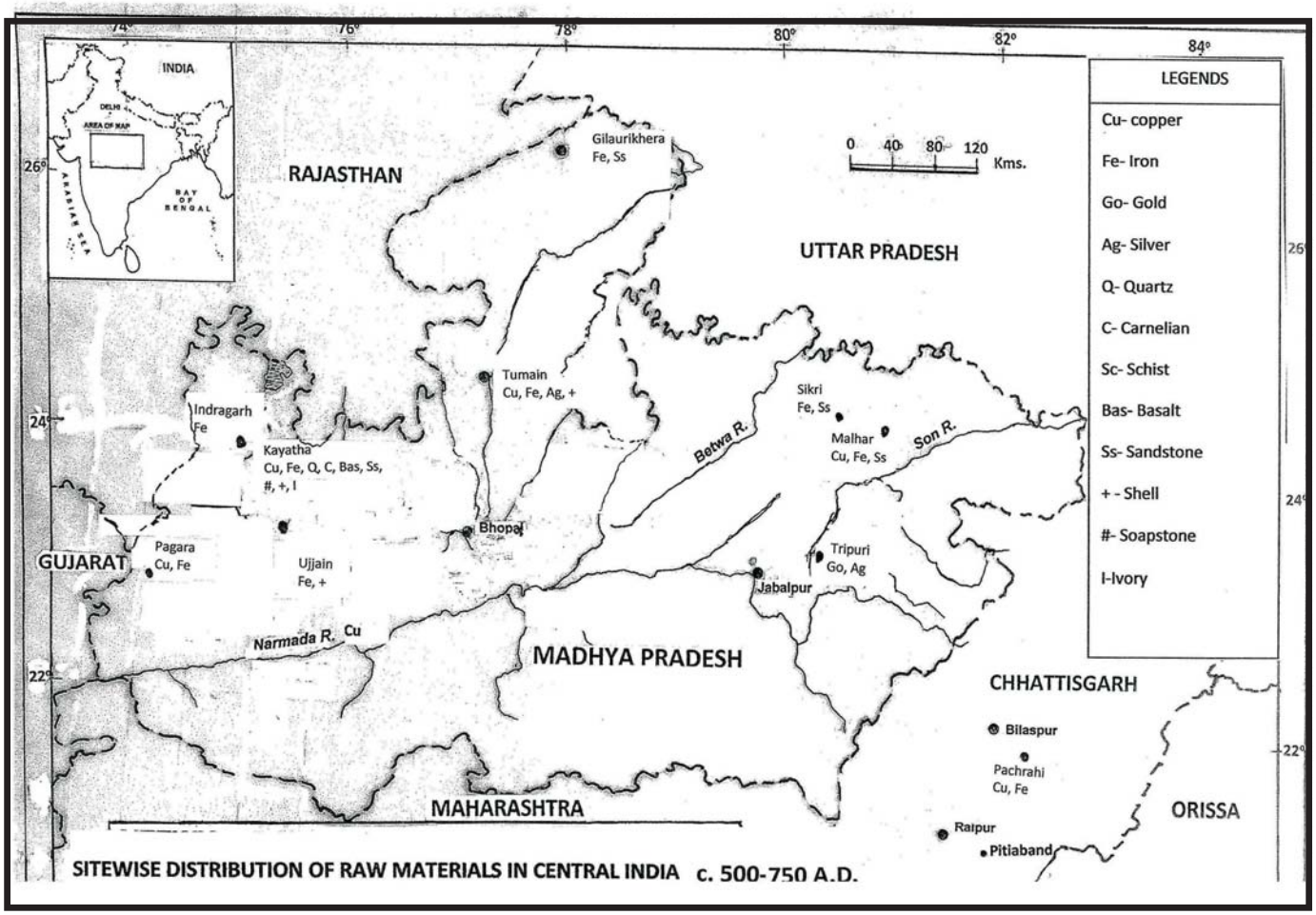
Chart 14c
Central India—c.500—750 A.D.

Raw Materials	*Kayatha*	*Tumain*	*Malhar*	*Pagara*	*Gilaurikhera*	*Ujjain*	*Sikri*	*Sirpur*	*Tripuri*	*Indragarh*
Copper/Bronze	coins, spouted cup, bowls, bangle, antimony rods	bangles, vessels	weight	objects						
Iron	arrowheads, spearheads, knife blade, ladle,rod	arrowheads, nails, spear heads	nails, arrowheads, spearheads	objects	axe, sickle, edge knife	bangles, chisels, spearhead		nails, door jams, dowels, chisels, razors		beads, bangles, weapons
Gold								coin	coins	
Silver		Gadhaiya coin hoard							coins	
Semi-Precious stone	Quartz,Carnelian, drop pendant		unspecified beads							
Ordinary Stone	Basalt quern, Sandstone figure	pestle, querns	red Sandstone piece, stone seal		ball, grinding stone		Sandstone figure, pillar	Schist stone image		
Steatite/Soap-stone	Soapstone lid, spool									
Shell	bead, bangle	beads, bangles				bangle pieces		sealing		
Ivory	carved bottle, bangle				bangle piece					

Chart 14c (continued)

Raw Materials	*Pachrahi*
Copper/bronze	objects, rings
Iron	objects
Semi-precious stones	unspecified beads
Ordinary stones	pestles

MAP-53



SITEWISE DISTRIBUTION OF RAW MATERIALS IN CENTRAL INDIA c. 500-750 A.D.

Character of Sites and Distribution of Manufactured Objects

Kayatha was an ancient town of Kapithaka. It is known to be the birth place of the celebrated astronomer Varaha Mihira. Red slipped ware and other ceramic varieties were found from Period V dated second century BC to sixth century A.D (Ansari and Dhavalikar 1975: 8). It was chiefly characterized by a number of structural remains found on the mound. The site continued to be occupied in the post-Gupta period and later and this is evidenced by finds of sculptural and architectural remains of the medival period (Sharma and Mishra 2003: 118). Tripuri, west of Jabalpur was an ancient urban-religious site with Buddhist remains from earlier periods. The excavations revealed early medieval (Kalachuri) remains and also Indo-Sassanian and Kalachuri coins in gold and silver. Interstingly, a clay sealing of Nalanda Mahavira datable to the early medieval period was found at Tripuri (Sharma and Mishra 2003: 162, 24). Tumain was the ancient site of Tumbavana. Period IV was assigned sixth to twelfth century A.D and yielded black slipped and mica dust wares. Common shapes were bowls, small lamps and vases. Stone statues of Ganesha were found here. An important discovery was that of a hoard of 589 silver Indo-Sassanian coins assignable to seventh and tenth centuries A.D (Sharma and Mishra 2003: 217-18). Jain Tirthankara images, stone structures and red pottery are also reported from Tumain from this period (Chakrabarti 2005: 95). Ancient Vidisha or modern Besnagar was an important urban site and the capital of the Sunga rulers. It was possibly the capital of east Malwa. This was the site of the Heliodorous pillar of an Indo-Greek ambassador of that name. The excavation revealed six main habitatonal periods and have been identified ranging in chronology from the chalcolithic to the post-Gupta periods (Chakrabarti 1997: 222). Evidence of a pre-existing Shiva temple which might have continued till c.9^{th}-10^{th} A.D was noted here (Sharma and Mishra 2003: 94). Ancient Padmavati has been identified with the modern village of Pawaya near Gwalior. The excavations revealed brick remains and fragments of sculptures and those indicate the occupation of this site from first century A.D to late Gupta period (Chakrabarti 1997: 223). Maheshwar and Navdatoli in west Nimar district have a stratum VII assigned to the Muslim-Maratha period. Though literature and archaeology show a continued occupation of Maheshwar, evidence from excavations shows abandonment of a few areas. No materials have been recovered from the post-Harsha period (Sharma and

Mishra 2003: 130; Chakrabarti 1997: 224). Ujjain was a very important urban site at par with contemporary cities as Taxila, Kausambi and Rajgriha. Under Chandragupta II, Ujjain became a cultural centre along with being commercial and politicaly important. The affluence of the city of Ujjain is reflected in the works of Kalidasa, the Sanskrit poet. The site on excavation showed a continuous habitation from the Mauryan period to the period of the Paramaras in the ninth-tenth century A.D (Chakrabarti 1997:224). Structural remains were noted in period III assigned to the Sunga from the Paramara period. The rampart was made of heaped clay and had a long chronology from the Mauryan to the end of Paramara period. Terracotta ringed soak pits, ring wells; bottomless soakage jars and terracotta drain pipes have been found in both period II and III (Chakrabari 1997: 224-25). Period II at Pachrahi in Kabirdham district of present Chattisgarh yielded coins of Kalachuri kings. Brick built structrures were found in excavations. Terracotta beads and pottery of red ware and grey ware were reported (Yadav and Pradhan 2008: 52).

The resource-use at the urban sites is varied and adequate. Use of copper and iron is abundant. Copper was present in the form of spouted cup, bowl, coins, bangles, vessels. Iron artifacts include arrowheads, spearheads, ladle, and rod, nails, door jams, dowels, chisels and shaving razors. Silver coins are found at Tumain. Semi-precious stones were used at Kayatha, the stones used being quartz and carnelian beads. Basalt quern and soapstone lid and spoon have been found at Kayatha. Other artifacts from Sirpur are a schist stone image and shell sealing. Shell, bone and ivory objects are also found at Kayatha.

The smaller sites of the region are Pagara, Gilaurikhera, and Sikri. Bilawali, a small site in Dewas district had yielded early medieval period antiquities from period IV (Sharma and Mishra 2003: 95). Pagara west of Dhar yielded early and late medieval pottery and other artifacts (Sharma and Mishra 2003: 199). Gilaurikhera yielded pottery of the period. Terracotta ball, well, tablet and other objects were found. Peetnagar in Khargaon district yielded polished red ware and stamped pottery belonging to Gupta-post-Gupta periods (Sharma and Mishra 2003: 149). At Datia, fifty terracotta sealings with Vedic Mantras in script datable to the c.6^{th}-7^{th} A.D was found in exploration (Sharma and Mishra 2003: 23). Keolari in Seoni district has yielded a number of Jain sculptures dated to the early

medieval period (Chakrabarti 2005: 88). At Dhamnar a clay seal dated to the fifth-sixth century A.D was found (Sharma and Mishra 2003: 23). Indragarh in Mandsaur district exposed a Siva temple built according to a stone inscription found there in c.709 A.D of Rashtrakuta period. The partial plan of the the temple was revealed, stone images and architectural parts of the temple were also found. A sacrificial pit made of bricks and containing ashes and charred grains were recovered as well (Sharma and Mishra 2003: 184). Ninnore in Sehore district yielded Buddha head, brick walls of houses and apsidal temple, drainage system dated to the third to the seventh century A.D. The excavation revealed a continuous habitation from the Mauryan to the Muslim period without break (Sharma and Mishra 2003: 192, 198). Sodanga, northwest of Ujjain yielded from period IV (c.300-600 A.D) red polished ware and a few objects of iron. A thick deposit of ash was noted on the mound indicating that, the site might have been deserted by the Huna invasion in the sixth century A.D (Sharma and Mishra 2003: 216). Deogarh in Lalitpur district is famous for the Gupta period temple. The site has a dense concentration of early medieval sculptural and architectural remains (Chakrabarti 2005: 94).

The resource-use at these sites is similar to the urban sites. However, the number of objects found from these sites is limited.

There were several religious sites in the region especially associated with Buddhism. Avra in Mandsaur district, though not mentioned anywhere in literature, has seventh century rock cut Buddhist caves with monasteries (Sharma and Mishra 2003:88). The stupas cut in a hill called the Chandangiri in ancient times. The neighbouring town of Chandawasa is named after it. The fourth-fifth century A.D stratum had structural remains of the post-Khastrapa layers. This layer yielded Mother-Goddess figurines and red polished ware (Sharma and Mishra 2003: 88). Sanchi in east Malwa was the famous Buddhist stupa site from the period of the Mauryan ruler Ashoka in the third century B.C. With a continued occupation of this site, the sixth-seventh century A.D at Sanchi is represented by art remains of detached images continuing the contemplative spirit of divine peace. However the depiction of beauty by the earlier artists was missing (Marshall 1955: 22). Dhavalikar (2003: 89) has recorded small stupas at the site dated to the sixth century AD. One stupa east of temple was heavily repaired and dated to the the seventh-eighth century A.D (Dhavalikar 2003: 90). Malhar in Bilaspur district witnessed occupation from Mauryan

period to Gupta period and later. This was the capital of south Kosala which was later shifter to Sirpur. Period IV at Malhar assigned to post-Gupta period (c.650-900 A.D) did not yield structural evidence except that the site was associated with the Buddhist creed. Baked clay seals and sealings bearing the Buddhist symbols, terracotta objects, sculptural and pottery, decorated pieces were some of the objects associated with this period (Sharma and Mishra 2003: 135; Chakrabarti 2005: 52). Sirpur in Mahasamund district presently in Chattisgarh state was first mentioned in the inscription of Sarabhapuriya king Mahasudeoraj of fifth-sixth century A.D (Joshi and Sharma 1999-2000:110). Sirpur was an urban-cum-religious site from early times. It was the nucleus of political as well as art and literary activities in whole of' *Dakshin Kosala*. A Buddhist nunnery was found here. Also Huien Tsang discovered almost a hundred Buddhist monasteries here (Joshi and Sharma 1999-2000:110). Excavations at Sirpur revealed remains of two large monasteries. It was rectangular in plan with a large paved courtyard in the middle and rows of irregularly grouped cells. The first phase dated to the fifth century A.D and the second phase dated seventh century A.D was a period of large scale structural activity at the site (Chakrabarti 2005: 54). This is evidenced by stone and brick structures. Images of Bodhisattava, Manjusri, and Avalokiteswara were recovered from the viharas in damaged condition (Sharma and Mishra 2003: 209, 215). Birchahabili Tila in Sikri situated in the upper Vindhyan ranges was a place mentioned in the *Mahabharata* in connection with Sahadev's southern campaign on the eve of Rajasuya yajna performed by the Pandavas. Excavations revealed a stratum dated sixth to the ninth century A.D. Structures made of random rubble masonary and mud bricks. A hearth with brickbats lining was excavated here. These were dateable to sixth- eighth century A.D (Sharma, Prabhakar, Pradhan and Kabui 2000-01: 57-58). At the site of Balikeshwara in east Nimar district the excavation revealed three phases of structural activities. The Phase I (post-Gupta period) is represented by brick structure laid in front and back of a Siva temple. No other information on this phase is known from the excavations (Sharma and Mishra 2003:177). Ekalbara in Dhar district was an ancient mound. Six cultural periods were revealed here, from the chalcolithic period to Paramara and Muslim period (IAR 2001-02: 109).

The elaboration of artifactual remains has been found from the site of Malhar. Use of copper is seen at Malhar and Sirpur in form of weight, several iron objects such as nails, arropwheads and spearheads, door jams, dowels, chisels have been reported

from these sites. Gold coins of Sarabhapuriya dynasty have been reported from Sirpur. Semi-precious stones have been used in the form of beads at Malhar but it has not been specified.Other raw materials used include only a red sandstone piece only. Shell sealing has been reported from Sirpur.

A wealth of epigraphic, numismatic and sculptural evidence is available from the region of the post-Gupta period. Seven inscriptions of the Aulikara dynasty of Mandsaur were found from Bihar-Kotra, Bhanpura, Hasalpur and Risthal indicate that early Aulikara rulers were feudatories of the Guptas. The Mansaur inscription of Yasodharman describes the defeat of the Huna ruler Mihirkula by Yasodharman (Sharma and Mishra 2003: 7). Maitraka inscriptions from Nogawa in Ratlam district indicate the sway of the rulers in western Malwa (Sharma and Mishra 2003: 9). One of the branches of the Rashtrakuta rulers ruling in the seventh-eighth centuries AD is found in the region at Tiwarkhed and Multai in Betul districts. Gurjar-Pratihara grants are known from Gwalior who ruled in the early eighth century A.D (Sharma and Mishra 2003: 10). Indo-Sassanian coins have been found in hoards from several sites in the region. These are, Avra, Indore, Ujjain, Eran, Chanderi, Chhindwara, Devatpur, Patan, Balaghat, Mandhata, Seoni, Raipur, Hoshangabad and Tumain (Sharma and Mishra 2003: 20). Painted caves are found at Bagh dated to sixth-seventh centuries A.D. This is highlighted through the discovery of copper plate inscriptions of feudatories of the imperial Gupta rulers (Chakrabarti 2005: 107).

Raw Materials Available Within The Sub-Region

The presence of copper, silver, iron, sandstones, soapstone and semi-precious stones such as quartz, agate, jasper and chalcedony has been noted on p. 104.

Iron

Iron ores of good quality occur in Balaghat, Raipur and Bilaspur district. The Chanda districts have most extensive deposits that consist of crystalline haematite. (I.G.I. Central Provinces1908:58). Deposits occur at Kurai range in south of Seoni district (IGI Central Provinces 1908: 234). In the upper half of Narmada valley, iron ore occurs at Narasinghpur with mines at Tendukheda, north of Narmada (IGI Central Provinces 1908: 248).

Schists

The Bijawar series consist of crystalline limestone, quartzite and schist (Srivastava 1968:10).

Raw Materials Available Outside The Sub-Region

GUJARAT

Shell

Shell is available in the coastline.

Epigraphic, Numismatic and Literary Linkages

The dominant coin type in the post-Gupta period was the Indo-Sassanian or Gadhaiya type coinage. These were found from a wide region in north India that spread from Rajasthan, Gujarat, western Deccan, Malwa, and Uttar Pradesh to Bihar. Indo-Sassanian coins have been found as stray coins as well as in hoard from Tumain. The uniform spread of this currency in the post-Gupta period indicates a certain connection between these regions. Politically, the Chalukya dynasty became an important power in south Deccan. Chalukyas established a vast empire from Gujarat to south Karnataka and in and around the Godavari in Andhra (Chakrabarti 2006: 426). Their inscriptions are found at several sites in Gujarat and speak of their presence in the region. These were Kaira grant of Vijayaraya, Navsari plates of Pulakesin II, and Balsar plates of Mangalarasa (ed. Krishnappa and Gopal 2000: 36). In the early seventh century A.D, the Aihole inscription of Chalukyan ruler Pulakesin II describes his campaign in eastern Deccan where he defeated the Panduvamsis of Dakshin-Kosala and the Ganga rulers of Kalinganagara (ed. Majumdar 1954: 238). The above evidence of epigraphs indicates that the Chalukyan rulers held a part of the Central Provinces as well as parts of the Orissa region. The *Dakshin Kosala* region comprising Chattisgarh and Orissa is also marked by the flourishing of Buddhist settlements in both the regions in the post-Gupta period. Sirpur in Chattisgarh and Lalitagiri and Ratnagiri in Orissa have both been described by Huien Tsang as flourishing centres of Buddhism. Numerous monasteries have been discovered at both these sites.

A number of Kushana donatary inscriptions were found from the apsidal temple at Lalitagiri. The fact that it was a foremost Buddhist site and was connected to several

parts of India is clearly established by these records. The account of Huien Tsang in the seventh century A.D describes his journey from Karnasuvarna, Odra, Tamralipti, Pushpagiri, Kongoda and Kalinga and Andhra. The Ratnavali suggest a coastal Kalinga route was connected to Kausambi and passed through South Kosala (Patnaik 1993: 50). A link between these sectors was highly probable in the light of the above evidence of movement in the region.

The Vindhyan region in the post-Gupta period had a well spread out occupation. The artifactual repertoire in the urban region is adequate. This is especially true of Kayatha; Tumain, Malhar, Sirpur are sites with which have yielded substantial artifactual finds. Manufacturing activity in this period is noted at Gilaurikheda and Indragarh, both small sites. Most of the resources were obtained from within the region except shell which was in all likelihood procured from Gujarat for the western Malwa region; while the sites of Sirpur, could have obtained shell from the east coast in Orissa. The exchange network in this period was limited. However, the region comprised different types of settlements that had a continued occupation from the early historical upto medieval period which speak of its importance even in the the post-Gupta period.

Andhra Pradesh

The region is known for the Ashokan edicts at Yeragudi and Rajmundhry and had well established Mauryan and post-Mauryan settlements. The early centuries of the Christian era witnessed the coming up of several Buddhist establishments throughout the region. Some of the sites with Buddhist remains are Amaravati, Nagarjunakonda, Yaleshwaram and Kotilingala. In the post-Gupta period however the number of sites has come down substantially. The two sites, Amarabad and Dachapalli, are small. Archaeology does not reveal much about these sites.

Sitewise Distribution of Manufactured Objects

Chart 15c shows the raw materials used in this region. They are gold and limestone.

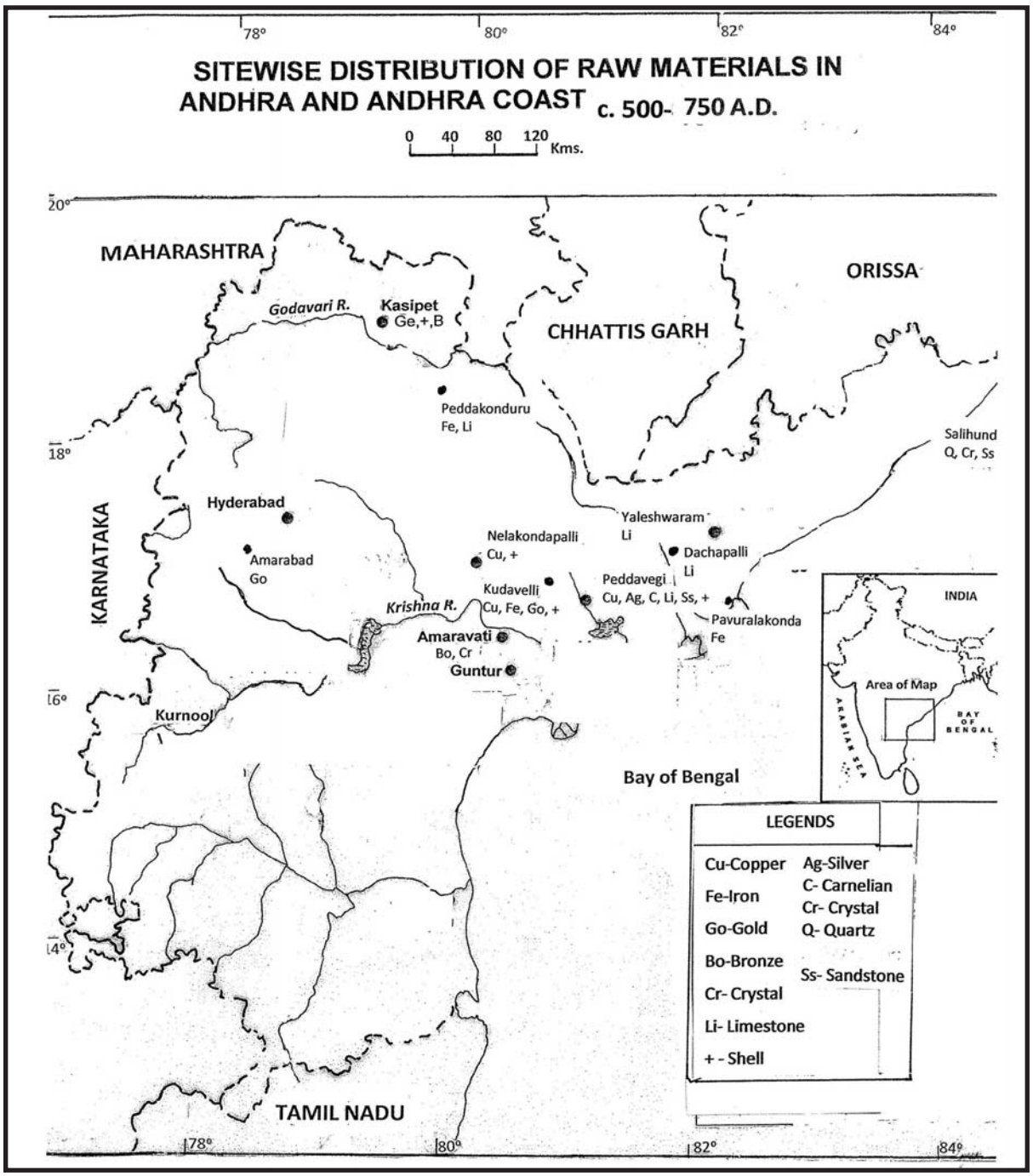
Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture can be seen at any of these sites.

Chart 15c
Andhra—c.500—750 A.D.

Raw Materials	*Amarabad*	*Dachapalli*	*Nelakondapalli*	*Kudavelli*	*Yaleshwaram*	*Amaravati*
Copper			coins	rings	Bronze images	
Iron				spearhead, arrowhead, nails		
Gold	coin			Roman coins		
Semi-Precious stone			unspecified beads	unspecified beads		Crystal relic caskets
Ordinary Stone		Limestone Shivalinga		stone plaques	Limestone pillars	
Shell			beads	beads, bangles		

MAP-54


SITEWISE DISTRIBUTION OF RAW MATERIALS IN ANDHRA AND ANDHRA COAST c. 500- 750 A.D.
0 40 80 120 Kms.
78°
80°
82°
84°
20°
18°
16°
14°
MAHARASHTRA
ORISSA
CHHATTIS GARH
KARNATAKA
TAMIL NADU
Bay of Bengal
Godavari R.
Kasipet
Ge,+,B
Peddakonduru
Fe, Li
Salihund
Q, Cr, Ss
Hyderabad
Amarabad
Go
Nelakondapalli
Cu, +
Yaleshwaram
Li
Dachapalli
Li
Peddavegi
Cu, Ag, C, Li, Ss, +
Kudavelli
Cu, Fe, Go, +
Krishna R.
Amaravati
Bo, Cr
Guntur
Pavuralakonda
Fe
Kurnool
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
LEGENDS
Cu-Copper
Ag-Silver
Fe-Iron
C- Carnelian
Cr- Crystal
Go-Gold
Q- Quartz
Bo-Bronze
Ss- Sandstone
Cr- Crystal
Li- Limestone
+ - Shell

Character of Sites and Distribution of Manufactured Objects

Yaleshwaram in Nalgonda district has revealed extensive habitational deposits. The remains are mostly associated with Buddhism. Excavations revealed layers ranging from megalithic period levels to Vishnukundin period from the mid fifth century onwards (Khan 1963: 21). Early historical pottery, coins and two limestone pillars bearing a sixth century A.D inscription were found in the post-Ikshvaku period at Yaleshwaram. Several structures were encountered belonging to a temple complex. The structures included primarily an apsidal *chaitya* hall. A large hall was found with limestone pillars. Wedge shaped bricks were used in these structures (IAR 1960-61: 3). Kudavelli in Mahbubnagar was a thriving site in the early historical period as known by the evidence of Roman and Byzantine gold coins. The stratum dated eighth to twelfth century A.D assigned to period IIA revealed artifacts of the early Chalukyan period. The site witnessed the foundation of the early Chalukyan Sangameshwara Siva temple. A number of other brick built shrines were exposed around the temple complex. Other antiquities found from this sub-period are, beads, spindle whorls of terracotta, and tops of stones. The ceramic industry in this period included red-slipped, dull red, dull black and black slipped wares (IAR 1978-79: 39). Amaravati in the Guntur district is a world renowned Buddhist establishment of the early centuries A.D. The affinity of the style of its architecture is shared by other sites associated with Buddhism in Sanchi and Bharhut in Central India. The history of Amaravati is spread across several centuries spanning from fourth century B.C to fourteenth century A.D (Singh 2004: 249). Nelakondapalli is a stupa site in the Khammam district. The *mahastupa*, and viharas were built of burnt bricks and antiquities of both Ikshvaku and Vishnukundin period were found (Babu 1999: 47). Coins of the Vishnukundin dynasty were also found here (IAR 1977-78: 3). During the period from third and the sixth century A.D structural *viharas* were added to the existing stupa (Sarma 2008: 218). Kesareghatta in Rangareddy district was a township of the Vishnukundin rulers. Excavations exposed extensive fortification wall built around the periphery. The superstructure was possibly raised in brick and the fortification had three main gates. Antiquities from the site from this period included Vishnukundin coins of fourth-fifth century A.D and pottery (Sarma 2008: 212). Nagarjunakonda, the celebrated centre of the Ikshvaku rulers of the third century A.D

did not reveal a post-Ikshvaku stratum in excavations. The site did not develop beyond the early fourth century due to the desolation of certain portions especially the temple are due to river action as observed by Soundarajan (2006: 52, 55).

The sites surveyed above were mostly represented by Buddhist structural remains and did not yield many antiquities. Limestone pillars were part of architectural remains at Yaleshwaram. Copper coins of ruling dynasties and rings were the artifacts found at Nelakondapalli and Kudavelli. The latter site also yielded a few iron artifacts such as, spearhead, nails and arrowheads. Semi-precious stones were used as beads but the raw materials have been left unspecified for sites like Nelakondapalli and Kudavelli. Other artifacts include shell beads and bangles from Nelakondapalli and Kudavelli.

The site of Amarabad in Mahbubnagar (IAR 1968-69: 58) is a small settlement. A gold coin of the Western Chalukyas has been found from Amarabad. Other sites such as Chagapur, Rampur and Manopad in Mahbubnagar district revealed early medieval temples (IAR 1978-79: 3).

Raw Materials Available Within The Sub-Region

The presence of gold is noted on p. 133.

Copper

In Gani-Kalva area in Nandyal and Kurnool district there are old workings of copper (Rajagopal 1974: 14). Native copper mines are situated between Chimur and Warrangal near Hyderabad (Mallet 1887: 6).

Iron

Numerous small occurrences of iron-ore (haematite) are noted in the Kurnool district. Reasonably good deposits are found at Ramallakota, Veldurthy area in Dhone taluk. Here, massive and flaky haematite occurs in fault zones of the Cuddapah formations (Rajagopal 1974: 15).

Limestone

Narji limestone occurs in Koilkuntala and Dhone taluk in Kurnool district. Limestone also occurs in the Palnad region at Dachhapalli in Guntur region (Rajgopal 1974: 15; 1977: 16).

Raw Materials Available Outside The Sub-Region

ANDHRA COAST

Shell

This is available along the coastline.

Epigraphic, Numismatic and Literary Linkages

The post-Gupta period was dominated by several regional kingdoms such as the Salankayanas, Anandas, Brihatpalanyas and so on. The Vishnukundin dynasty (c.4th-7th A.D) was known to have controlled the area of central and eastern Deccan that was once under the Vakatakas. These covered some parts of Andhra region particularly the lower Godavari and Krishna basins. Their coins have been found from Nagarjunakonda, Yaleshwaram, Tangutur, Vaddamanu, Telkunta, Dharanikota, Pedavegi and Kesaraghatta in Andhra region (Sarma 2008: 51, 192). The Vishnukundin rulers controlled a vast area in the coastal strip of Andhra as well. This is proved by their grants found in Polamur in Godavari district (594 A.D), Velupuru Pillar Inscription in Guntur district (495 AD), Ramatirtham copper plate inscription from Vishakhapatnam district (544 A.D), Chikkakula plates (565 A.D), Tummalagudem plates (566 A.D) and Polamuru plates from Ramchandrapuram (612 A.D) in east Godavari district (Sewell 1932: 21; ed. Parashar –Sen 1993: 140-141). The next powerful rulers of the Deccan were the early Chalukyas of Badami in Karnataka. They were a dominant power from sixth to the eighth century A.D. The Aihole inscription of Pulakesin II lists his military conquests far and wide. The Chalukyan empire, besides other regions included the eastern region of Andhra where the family of the Eastern Chalukyas of Pithapuram was established (Majumdar 1954: 250). The Western Chalukya grants have been found in Guntur district (650 A.D) Nandyal Kurnool (689 AD) and Nellore district (654 A.D), of Andhra (Sewell 1932: 24-26).

In the Andhra region in the post-Gupta period, occupation was confined to a few pockets. Sites were noted in Mahbubnagar in the west, Yaleshwaram in Nalgonda in the central region and Nelakondapalli in the Khammam district in the north. These were mostly Buddhist sites and had architectural remains. We do not find any

evidence of manufacturing activity in this period. The limited raw materials used were gold, iron, copper, limestone and shell. The whole pattern of exchange was restricted and most of the materials used were available from within except shell. This was possibly procured from the coastal region. The habitation in this period was more elaborate in the coastal region as shall be surveyed in the next section.

Andhra Coast

This was an important region for its maritime trade throughout the period from early historical times. It has Buddhist sites such as Bavikonda, Thothlakonda and urban centres as Peddavegi (Fogelin 2006).

Sitewise Distribution of Manufactured Objects

Chart 16c shows the different raw materials used in the region. These are copper, bronze, iron, silver, carnelian, crystal, quartz, limestone, sandstone and shell.

Evidence of Manufacture of Finished Products At Different Sites

No evidence of manufacture can be seen at any of these sites.

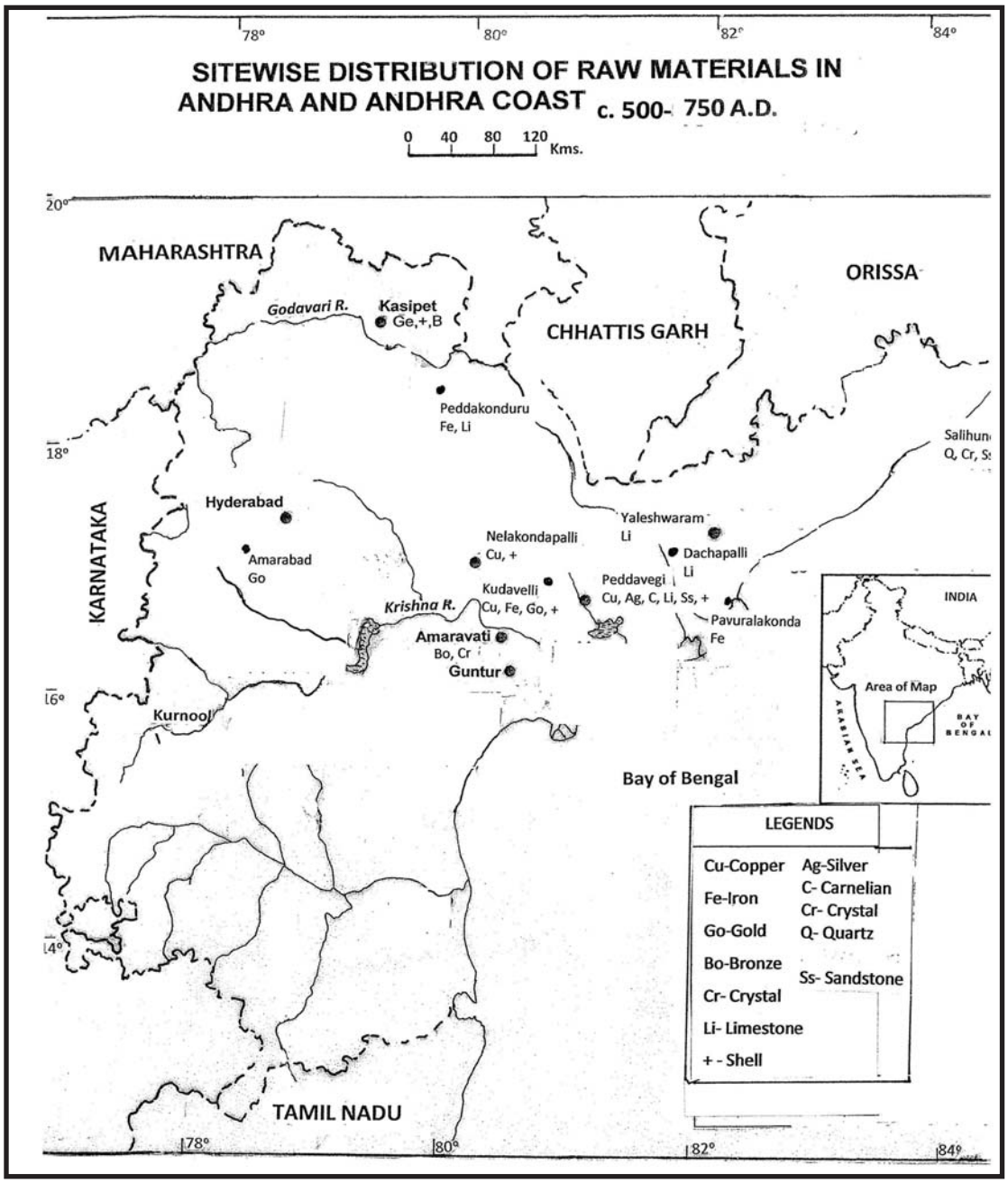
Character of Sites and Distribution of Manufactured Objects

Peddavegi was the ancient site of Vengipura in west Godavari. It was the capital of the Salankayana, Vishnukundin and Chalukyan dynasties from the third to the eleventh centuries A.D. The coins of these powers have been obtained from Peddavegi. Huien Tsang mentioned a stupa built here by Ashoka (IAR 1984-5: 7). During the Vishnukundin period (5^{th}-7^{th} c.AD), the stupa became insignificant and was replaced by the Brahmanical temples of soft red sandstone. The ruins in the site in the early Chalukyan period was the Parameshwara temple whose basement was exposed in excavations (Sarma 2000: 16-17). Sankaram in the southwest of Thotlakonda was a monastic site of the early centuries A.D. Rock-cut cells with figures of the Buddha were discovered here (Fogelin 2006: 103). Vaddamanu in Guntur district revealed a layer dated c. 500-600 A.D assigned to the Vishnukundin period. An assembly hall of period IV was partially excavated in this phase (IAR 1984-85: 3). Rajamundhry had a continious habitation from the second-eighteenth centuries A.D. Limited excavation revealed a stupa, a brick wall of a monastery. The late centuries A.D revealed Hindu bronze figurines (Fogelin 2006: 105).

Chart 16c
Andhra Coast—c.500—750 A.D.

	Raw Materials	*Peddavegi*	*Peddakonduru*	*Pavuralakonda*	*Salihundam*	
	Copper/Bronze	coins, rings, pieces				
	Iron	blade, spoon, chisel,	nails	stylus,knife, nails, coins arrowheads		blade,bar,
	Silver	coin				
	Semi-Precious stone	Carnelian intaglio		beads	Quartz, Crystal	
	Ordinary Stone	Limestone plaque, Sandstone plaque Limestone, linga, Sandstone architectural remains	Limestone linga		Sandstone disc	
	Shell	bangles, beads, discs				

MAP-55


78°
80°
82°
84°
SITEWISE DISTRIBUTION OF RAW MATERIALS IN
ANDHRA AND ANDHRA COAST c. 500- 750 A.D.
0 40 80 120 Kms.
20°
18°
16°
14°
MAHARASHTRA
ORISSA
CHHATTIS GARH
KARNATAKA
TAMIL NADU
Godavari R.
Kasipet
Ge,+,B
Peddakonduru
Fe, Li
Hyderabad
Amarabad
Go
Nelakondapalli
Cu, +
Kudavelli
Cu, Fe, Go, +
Krishna R.
Amaravati
Bo, Cr
Guntur
Kurnool
Yaleshwaram
Li
Dachapalli
Li
Peddavegi
Cu, Ag, C, Li, Ss, +
Pavuralakonda
Fe
Salihun
Q, Cr, S
INDIA
Area of Map
ARABIAN SEA
BAY OF BENGAL
Bay of Bengal
LEGENDS
Cu-Copper
Fe-Iron
Go-Gold
Bo-Bronze
Cr- Crystal
Li- Limestone
+ - Shell
Ag-Silver
C- Carnelian
Cr- Crystal
Q- Quartz
Ss- Sandstone

The resource usage at the site of Peddavegi is reasonable. Copper and iron has been used as coins, spoons, nails, chisels, blade and rings. A single silver coin of Vishnukundin dynasty has been found. The use of semi-precious stones is not profuse. We find a carnelian intaglio. Limestone and sandstone plaques and a Shivalinga are some of the objects made of ordinary stones. Shell is used as bangles, beads and discs.

Smaller sites with early medieval structures/temples were found in explorations. Totaravullapadu in Krishna district; Ambadipudi, Daivalarapudu, Dharmavaram, Dhenukonda, Mukteshwaram, Kalavakur and Kondamunjalaru in Prakasam district have exposed cultural assemblage of the early medieval period (IAR 1977-78: 2). Dachapalli in east Godavari district is a small site and has yielded a limestone Shiva linga which is an interesting find from here (IAR 1989-90: 1). Jaggayapeta in Krishna district was a stupa site and explorations revealed that the stupa was in existance till sixth-seventh centuries A.D (Babu 1999: 39). An early medieval period cultural assemblage and sculptures were found at Gangavalle in Jaggayapeta area (IAR 1984-85:4). Ghantasala in Krishna district revealed a long sequence of occupation. It ranged from Satavahana period to post-Ikshvaku period habitation. The post Ikshvaku period datable to the fifth century onwards revealed a square brick structure with extant brick courses raised over a high square brick platform. A stucco head of *Yakshi* was a noteworthy find (IAR 1984-85:5). Peddakonduru in Guntur district revealed in excavations a temple of Anandeshwara which had a unique linga within the square sanctum. This *ardhanari linga* was the first of its kind in the region and can be assigned to the post-Ikshvaku period possibly of the Anandgotrin dynasty (IAR 1986-87: 9). Another site of Pavuralakonda in Vishakhapatnam district was exposed in a layer belonging to the Vishnukundin period with antiquities. They included brick-structures, coins, pottery, terracotta beads, figurines and iron nails (IAR 2001-02: 12).

The town of Dhanyakataka served as the capital and head quarter of several known dynasties such as the Pallava rulers, Salankayanas, Vishnukundins and the Chalukyas of Vengi (Sarkar and Nainar 1972: 8-9). The great stupa is called *Mahachaitya* and has the paved *pradakshina patha* with a circular alignment of the railing, represented by several pillars or *ayaka-stambhas* Sarkar and Nainar 1972: 9). In the period between the fourth to the sixth century A.D there were several sculptures and metal images ascribed to this

phase. A few bronze images of standing Buddha were assigned to this period. On the basis of sculptures alone, it is possible to establish that the *Mahachaitya* continued as a centre of Buddhism till about tenth century A.D (Sarkar and Nainar 1972: 16-17). Excavations yielded Vishnukundin coins and crystal relic caskets dated between sixth and eleventh centuries A.D of period V (Babu 1999: 24-5). Sankaram, southwest of Thothlakonda, was an important Buddhist establishment in the fifth century AD. The rock cut cells contain the figure of the Buddha but later centuries revealed the figures of Siva and Ganesha (in the ninth century A.D.) It attests to the use of the site until the ninth century A.D but not solely by the Buddhists (Fogelin 2006: 103). Rajamundry exposed in limited excavations layers datable from the second century to eighteenth century. The earlier period revealed remains of a stupa. However later levels revealed Hindu bronzes (IAR 1979-80:1). Ramatirtham in north coastal Andhra Pradesh exposed layers dated from first to ninth century A.D. Though the earlier levels exposed stupas and other Buddhist structures, the latest datable finds include Jain images from eighth-ninth centuries A.D (Fogelin 2006: 105). Mukhalingam is a site with a long chronology. The site dated from the first century BC to ninth century A.D. Several fragments of ninth century Buddha images have been found at the site (Fogelin 2006: 106). Salihundam is a Buddhist site in the Srikakulam district. Salihundam and the area around it formed part of ancient kingdom of Kalinga in the Mauryan period (Subramanyam 1964: 10).The site had a substantial Kushana and Gupta period layer as well. The excavations revealed a layer dated second to the sixth century A.D. The structures contain monasteries and several other religious structures. The later images show the influence of Vajrayana Buddhism. Numerous inscriptions are dated between second and the sixth century A.D (Fogelin 2006: 106).

Raw Materials Available Within The Sub-Region

The presence of copper, iron, and sandstone and shell has been noted on p. 139

Limestone

Limestone is available in the Palnad region at Dachhapalli in Guntur region. Also crystalline limestone is reported from Vinjamuru area in Nellore district (Rajgopal 1977: 16; 1978: 7). This has also ben discussed on p. 252.

Raw Materials Available Outside The Sub-Region

KARNATAKA

Crystal

Crystal is associated with pegmatite veins in north-south direction on east of Mangalur schist patch in Shorapur taluk in Gulbarga district (Sri Sathyan 1966: 23).

ANDHRA PLATEAU

The availability of semi-precious stones have been noted on p. 133.

Silver

Lead and galena is available in the Chelama area in Nandyal taluk there are occurrences of galena. There are several old workings in the area. (Rajagopal 1974: 14)

Epigraphic, Numismatic and Literary Linkages

The Early Chalukyas of Badami under Pulakensin II formed a powerful empire. The Aihole inscription of Pulakesin II (634-35 A.D) gives a graphic account of his victories. He is known to have besieged the Kadambas of Vanavasi, Gangas of south Mysore and the Alupas of Shimoga district in the different parts of Karnataka (ed. Majumdar 1954: 235). The establishment of the eastern Chalukya dynasty at Pishthapura in Godavari district substantiates the hold of the Chalukyas over a vast region in the Deccan. Grants of seventh century of Western Chalukyas were found in Anantpur and Bellary district, Kadur district in north Mysore in Karnataka (Sewell 1932: 26). Grants of the Western Chalukyas have been found from Badami, Aihole and Pattadakal in north Karnataka (eds. Krishnappa and Gopal 2000: 37). Such records have been found in the Andhra region as well. These are, grant by Vinayaditya (689-90 A.D) from Nandyal and Kurnool district of Andhra (Sewell 1932: 26). Several grants of Pulakesin II Chalukya prove his dominance over this region. These are Hyderabad plates, Kopparam plates of Pulakesin II, Peddavadaguru stone inscription of Satyasraya, Kurnool plates of Adityavarsa, Nilluru stone inscription of Kirtivarman II and so on (eds. Krishnappa and Gopal 2000: 36-37).

The ancient city of Vengipura in the post-Gupta period was in and around the Andhra coast. The spread of Buddhist sites is striking in this portion of coastal Andhra. Sites such as Sankaram near Thotlakonda, Ramatirtham, Mukhalingam, Rajamundry and Salihundam showed the importance of Buddhist creed this region. Resource wise, the

region yielded few artifacts. Hence we do not see the variety in resource utilization. A few resources that were available within the region were copper, iron, limestone, sandstone and shell. The resources obtained from outside were silver and semi-precious stones possibly from Andhra mainland and crystal from north Karnataka region. The resources used did not include any specialized materials such as lapis lazuli. The contact zones of this region were restricted. The lack of any manufacturing activity is noteworthy for an urban site like Vengipura.

Karnataka

The region has several early historic sites from the time of the Mauryas. Some of them are Bramhagiri, Chandravalli, Banavasi, and Vadgaon-Madhavpur and so on. Occupation of these sites continued till the early centuries A.D In the post-Gupta period we come across sites as Talkad, Hampi and Honnudiker with cultural material of the period.

Sitewise Distribution of Manufactured Objects

Chart 17c shows the different raw materials used in the region. These are copper, bronze, iron, lead, gold, silver, quartz, agate, rock-crystal, crystal, carnelian, chalcedony, beryl, amber, amethyst, jade, mica, malachite, fuchsite, quartzite, granite, soapstone, bone ivory and shell.

Evidence of Manufacture of Finished Products At Different Sites

At Gudnapur in Uttara Kannara district a goldsmith's design mould was found. A rectangular solid cast iron bar used by goldsmith's for making ornaments was also found (IAR 1990-91:32).

Character of Sites and Distribution of Manufactured Objects

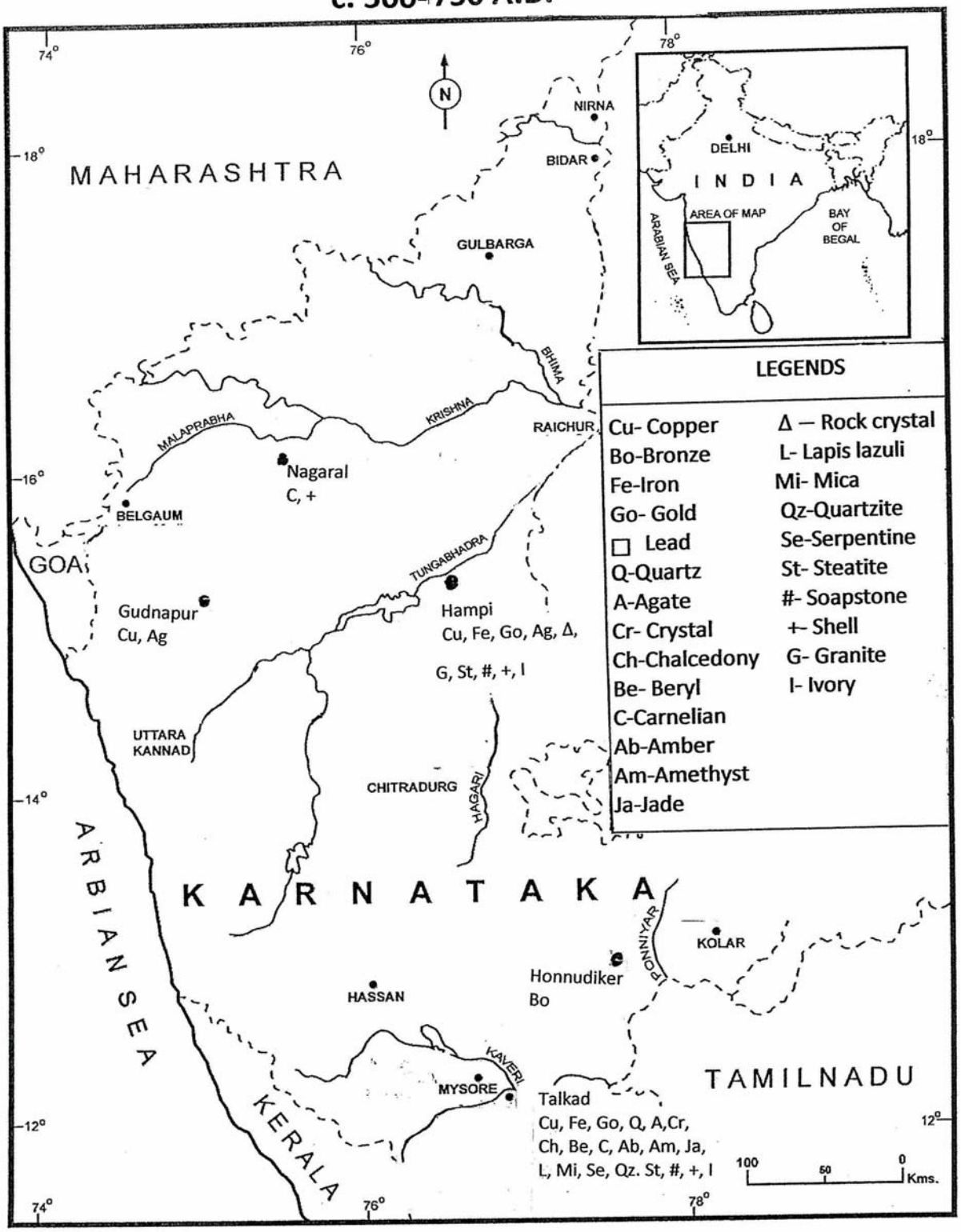
The urban sites of the region include Talakad (Mysore district) and Hampi (Bellary district). Talkad is a popular town known as the capital of the western Gangas who ruled from the sixth century A.D onwards. In one of the grants of king Sivamara (c.713-14 A.D) the site is referred to as *Vijayaskandhavara*. Inscriptions of Ganga rulers are also found here. The Ganga rulers are known to have built temples dedicated to Lord Shiva at this site (eds. Devaraj, Murthy, Krishnamurthy and Swamy 1996: 3). Hampi is another site with magnificent temples of the early Chalukyas. Excavations revealed stone objects including

Chart 17c
Karnataka—c. 500 ---750A.D.

Raw Materials	*Talkad*	*Honnudiker*	*Hampi*	*Gudnapur*	*Nagaral*
Copper/Bronze	pieces,buttons, rod ,needle, antimony rod	Bronze statue rings	coins,	casket	coins
Iron	pieces,ring,clamp, spearhead javelin head, door hinge	rings, nail, needles			
Lead		ingots			
Gold	pieces	buckle			
Silver		rings	objects		
Semi-Precious stone	Quartz,Agate beads,Crystal	Rock Crystal knobs, lids Quartz,Chalcedony beads,Beryl, Carnelian beads, Amber,Amethyst beads	unspecified beads	Carnelian bead	
Jade	beads				
Lapis Lazuli	beads				
Ordinary Stone	Mica chips Quartzite, Fuchsite beads, Serpentine beads	Granite	querns, sculptures		
Steatite/Soap-stone	Soapstone beads, reel/spool	Soapstone Shivalingas,	sculptures		
Shell	beads, bangles	objects		beads	
Ivory	beads, bangles	comb, pendant			

MAP-56

SITE-WISE DISTRIBUTION OF RAW MATERIALS IN KARNATAKA
c. 500-750 A.D.



fragments of architectural remains and sculptures stylistically dated to the later Chalukyan period (IAR 1983-84: 38). Explorations in Sannati in the Gulbarga district have brought to light sites in and around this region dating from the pre-historic to medieval cultures especially with respect to art and architectural activities between the second to the eighteenth centuries AD (Parashar-Sen 2004: 141). An ancient quarry site was found at Pattadakal from where quality rock material was extracted for construction of Badami Chalukyan edifices of eighth century A.D. The site yielded eight label inscriptions in character of eighth century A.D (IAR 2001-02: 334; Singh 2009:631). Banavasi was an important site of the early historical period. Period IV here has been assigned to post-Kadamba period. This strata yielded disturbed layers and fragmentary sculptures of *Kali*, brick bats and a few dull red ware and gray ware sherds (IAR 1994-95: 41).

The resource-use at the urban sites is profuse. Different kinds of raw materials have been used for the artifacts. Copper and iron has been amply used. Copper pieces, buttons, needle and antimony rods are some of the forms of their use. At Hampi copper coins of Chalukyas has been found. Iron artifacts are household articles and weapons such as javelins, spearhead, nails, rings, clamps, door hinge and so on. Lead ingots are found at Hampi. Gold pieces and buckles and silver rings are found at Talkad and Hampi respectively.

The use of different varieties of semi-precious stones is seen at Talkad. They are quartz, agate, crystal, chalcedony, amethyst, amber, jade and carnelian beads. Lapis lazuli beads are also seen at Talkad. The variety of ordinary stones is also seen at Talkad only. These are mica chips, quartzite, malachite, fuchsite and serpentine beads. Granite querns and sculptures are found at Hampi. Soapstone beads, Shivalinga and spool are other uses of resources. Shell, ivory and bone have been used as bangles, beads, comb and pendants.

The second section of settlements includes Honnudiker in Tumkur district. Herkal in northwest of Bagalkot has revealed a long sequence of cultures from Paleolithic to to early and medieval historical culture (Murthy, Sures, Pooncha and Basavaraj 2001: 11). At Gudnapur in Uttarakannada district were exposed in exploratons two brick structures of fifth-sixth centuries A.D. Excavations laid bare rectangular pillared verandah on one

side of the main brick structure. On either end of the verandah walls were raised to form rooms. A narrow pathway of brickbats was found between the central platform and the rectangular hall. Pottery comprising red slipped ware, greenish ware and vessels such as lids, spouts and sprinklers were found. Beads of sem-precious stones and a gold inlaid stud was alo found from this layer (IAR 1990-91: 31-2). The only artifact category from Honnudiker is bronze statues. At Ajjibal in Sirsi Taluk a temple datable to the seventh century A.D was found (IAR 1983-84: 46). Hanumankop in Dharwad district is another small site from which brick structure of post-Kadamba period and later structures were unearthed (IAR 1994-95: 35).

Buddhist sites are noted in the region. At Aihole a double storeyed Buddhist Vihara was exposed assigned to the Chalukyan period (596-8 A.D). At Badami some unfinished images of *Avalokiteshwara* and Buddha sculptures were found. The Chinese traveler Huien Tsang is stated to have visited Badami and had noted the existence of Hinayana and Mahayana Buddhists at that place. A reference to the gift of a land to Buddhist vihara and sangha at Melkote in Mandya district by a Ganga ruler is also known which underlines the spread of Buddhism in the Karnataka region (Sarma and Vara Prasada Rao 1993: 112-113).

Raw Materials Available Within The Sub-Region

The presence of gold, iron, copper, lead and silver, soapstone, green quartzite, amethyst have been noted on p.146, 147.

Granite

Banded granite gnesis is quarried at a number of places near Bondal, Thokur and Paddushedde in the Mangalore taluk (South Kanara District Gazt. 1973: 13).

Semi-precious stones

Different varieties of semi-precious stones are found in the region. These have been noted on p.140, 147,148.

Mica

Mica schists occur between Agumbe and Koppa in the Shimoga district and Chikmaglur district (Karnataka State Gazt. Shimoga dist. 1975: 13; Chikmaglur district 1981: 13).

Fuchsite

Quartzite is found Yarehalli in the Chikmaglur district (Karnataka State Gazt Chikmaglur district 1981: 13).

Shell and Ivory: These could be readily available from the Kanara coasts in the west of Karnataka.

Raw Materials Available Outside The Sub-Region

The presence of lapis lazuli (Afghanistan) has already been noted on p. 31.

KERALA

Amber

Amber occurs frequently with carbonaceous clay and woody horizons in Alleppy and Kottayam district (Ramachandran 1986: 86).

ANDHRA PRADESH

Serpentine

Serpentine occurrences are at Chintalacheruvu in Gooty taluk, Kondapuram in Tadpatri taluk in Anantpur district (Shivashankaranarayana 1970: 25).

Epigraphic, Numismatic and Literary Linkages

The epigraphic evidence of the early Chalukya rulers like Kirtivarman I (566-7-597-98 A.D), Mangalesa (597-610 A.D) and Pulakesin II (610-642 A.D) gives us an elaborate picture of their hold over a vast territory from west coast to the east coast. The Mahakuta Pillar inscription of Mangalesa describes the victory of Kirtivarman I over rulers of Vanga, Anga, Kalinga, Kerala, and Ganga among many others (ed. Majumdar 1954: 232). The famous Aihole inscription of Pulakesin II describes his military expedition and conquest of eastern Deccan including the regions of Kosala, Kalingas and besiege of the fortress of Pishthapura in the Godavari district. The most profound evidence of extension of Chalukyan rule is the establishment of the eastern Chalukya dynasty under Pulakesin II's younger brother Vishnuvardhan in the region (ed. Majumdar 1954: 238). Several inscriptions of the western Chalukyas are found at Nellore, Kurnool and Anantpur districts of Andhra (Sewell 1932: 24, 25, 26). The Hyderabad plates

of Pulakesin II, Kopparam plates, Nilluru stone inscription of Kirtivarman II and so on are some of the epigraphic evidences of extension of Chalukyan rule in the region of Andhra.

Karnataka was a well settled region in the post-Gupta period with a few cities. Talkad in Mysore district and Hampi in Bellary district were the well known urban sites. Talkad was famous as the capital of the Western Gangas was a flourishing centre. The volume and variety of artifacts speak of its affluence. Manufacturing activity is also noted in the region. Hampi was a thriving religious centre in the region. However, the settlements in the post-Gupta period was not widespread. The variety of raw materials used was mostly available within the region. These were gold, copper, iron, soapstone, granite and a few varieties of semi-precious stones.

The region was dependent on neighbouring as well as far off zones for obtaining certain resources. The Andhradesa and Kerela were the neighbouring territories from where different types of semi-precious stones were brought. Non-local resource such as lapis lazuli was possibly obtained from Afghanistan.

Tamil Nadu

The region was quite active from the early historical period. It was famous for the flourishing Indo-Roman trade carried on from the coast in the early centuries A.D. The sites with post-Gupta occupational layers are Uraiyur, Tikkampuliyur, Pallavamedu, Perur, Adiyamanakottai and Kanchipuram (IAR 1965-66: 26; Ramachandran 1980: 119; Mahalingam 1970:15; Ramachandran 1980: 95-96; ed. Sridhar 2005: 58; IAR 1980-81: 65; 1981-82: 63; 1970-71: 32).

Sitewise Distribution of Manufactured Objects

Chart 18c shows the different raw materials used in the region. These are copper, iron, gold, amethyst, agate, carnelian, steatite and shell.

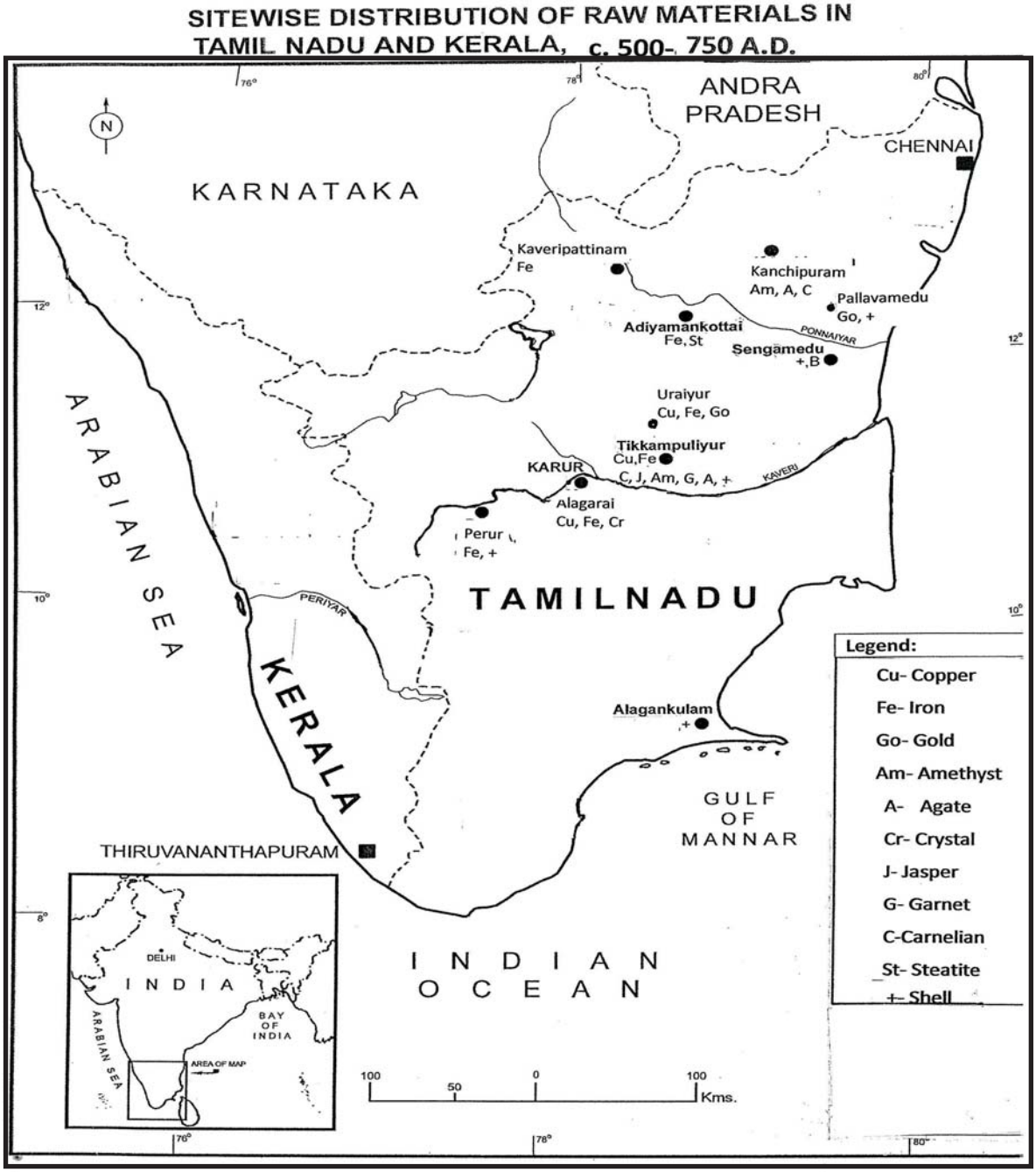
Evidence of Manufacture of Finished Products At Different Sites

Iron: Iron slags were reported from Palur in Kanchipuram district and the area seemed associated with iron smelting activity (IAR 2001-02: 232).

Chart 18c
Tamil Nadu—c. 500---750 A.D.

Raw Materials	*Uraiyur*	*Pallavamedu*	*Perur*	*Kanchipuram*	*Adiyamankottai*	*Tikkampuliyur*	*Alagarai*	*Kaveripatnam*	*Alagankulam*
Copper/Bronze	antimony rods,objects					bangles, rings, antimony rods, broken pieces of rattle	toe rings. thin rods		
Iron	objects		nails, rings, sword		nails,beads, , knives, hook, small spears, arrowheads, sickles	arrowhead, nail, nut cracker, arrowheads	daggers, knives	chisel	
Gold	pieces of chain	bead							
Semi-Precious stone				Amethyst,Agate beads,Carnelian beads		Carnelian, beads, Jasper, Crystal, Amethyst Garnet beads Agate beads	Crystal bead		
Steatite/Soap stone					points				
Shell		bangles	bangles			bangles			bangles

MAP-57


SITEWISE DISTRIBUTION OF RAW MATERIALS IN TAMIL NADU AND KERALA, c. 500- 750 A.D.
ANDRA PRADESH
CHENNAI
KARNATAKA
Kaveripattinam
Fe
Kanchipuram
Am, A, C
Pallavamedu
Go, +
Adiyamankottai
Fe, St
PONNAIYAR
Sengamedu
+, B
Uraiyur
Cu, Fe, Go
Tikkampuliyur
Cu, Fe
KARUR
C, J, Am, G, A, +
KAVERI
Alagarai
Cu, Fe, Cr
Perur
Fe, +
TAMILNADU
ARABIAN SEA
PERIYAR
KERALA
Alagankulam
+
GULF OF MANNAR
THIRUVANANTHAPURAM
INDIAN OCEAN
DELHI
INDIA
BAY OF INDIA
ARABIAN SEA
AREA OF MAP
100 50 0 100 Kms.
Legend:
Cu- Copper
Fe- Iron
Go- Gold
Am- Amethyst
A- Agate
Cr- Crystal
J- Jasper
G- Garnet
C-Carnelian
St- Steatite
+- Shell

Bead Manufacturing: Vadavur in the Chingleput district exposed a manufacturing site for beads. The site yielded beads in various stages of manufacture, crucibles, and other equipments. The beads were made of agate, chalcedony, glass and so on (IAR 1979-80: 68).

Shell: A large quantity of waste shells was found ar Tikampuliyur in Tiruchirapalli district from Period II ($3^{rd}/4^{th}$ c.-$9^{th}/10^{th}$ c.A.D).These evidences indicated a factory site for the manufacture of shell bangles and beads (Ramachandran 1980: 116).

Character of Sites and Distribution of Manufactured Objects

Uraiyur was the ancient capital of the Sangam Cholas in the early centuries A.D. Period II (4^{th}-$6^{th}/7^{th}$ c. A.D) and revealed structural remains of rammed clay flooring composed of rammed brick-bats and rubble. A few antiquities were also revealed (IAR 1965-66: 26). Stratum III was assigned a post sixth century A.D date after a break from the previous period (Ramachandran 1980: 119). The artifacts are of copper as antimony rods, iron as unspecified objects and pieces of a gold chain. Tikkampuliyur in Tiruchirapalli district has a Period II designated as the early medieval culture dated third-fourth century A.D to ninth-tenth centuries A.D (Mahalingam 1970: 15). Human and animal figurines in terracotta and a few other antiquities were found at the site. There was large scale building activities in this period. Rubble and brick walls, baked and unbaked were found. A double granary of two square rooms with two side projections was found here (Ramachandran 1980: 116-17). Similarly, Alagarai, a site that served as an embankment in the ancient times also had a stratum assigned to the early medieval period (Mahalingam 1970: 65). Copper coins of early medieval period and shell bangles were reported from this site (Ramachandran 1980: 118). Kaveripattinam or ancient Pumpuhar was the well known port town of the early Chola rulers in Tanjavur district. Epics such as *Silppadikaram* and *Manimekalai* dated to fifth-sixth centuries A.D relate the stories of entering Puhar, the port city on the Coromandal coast (Soundara Rajan 1994: 8). Excavations revealed one full wing of the monastery with oblong rooms. A compound wall was found surrouinding the monastery. A small brick structure was found outside the wall with a few copper coins, painted stucco fragments and terracotta images of the early medieval century were reported (IAR 1965-66: 24).

Arikamedu, the famous Indo-Roman trading post on the Coromandal Coast of the early centuries A.D revealed in recent excavations a Phase G assigned a date sixth to tenth centuries A.D (Begley 2004: 12). No antiquities have been reported from this phase. Excavations at Alagankulam have opened up a new chapter in Indo-Roman history with the discovery of Roman coins upto fourth-fifth centuries A.D. This site in Ramanathapuram was once a port on the east coast during c. 500-1200 A.D (ed. Sridhar 2005: 4). The excavations revealed various stages of occupation and Period IV dated 500-1200 A.D was exposed. The pottery from this phase was coarse red ware, Chinese celadon ware, porcelain ware and so on. The soil was associated with brickbats and tile pieces (ed. Sridhar 2005: 10, 14). Perur is another site with remains of the early medieval period. Habitation showed continuity from the sixth to the ninth century A.D (ed. Sridhar 2005: 58). Excavations revealed levels dated third-sixth centuries A.D and sixth-ninth centuries A.D respectively. Period III-third-sixth centuries A.D exposed habitation under the roof of the grooved tiles (ed. Shetty 2003: 14, 49). Structural activity of walls of baked bricks, covered stone drains was reported (Ramachandran 1980: 114; IAR 1970-71: 34). An important discovery of a small hip-hop with Chera emblem engraved with two lamps on either side is repoted from Perur. Other artefacts are terracotta figurines from the early medieval period (IAR 2001-02: 230). Ukkirankottai in Tirunevelli district was the fortified city of Karavandapuram of Pandyan period. Excavations revealed a wide wall made of mud and mud-bricks and a moat. The excavation within the walled area revealed a single culture deposit datable to the seventh to the tenth century A.D (IAR 1970-71: 35). Korkai in Teni district was a royal centre of early historic period. The early medieval period revealed a Jain sculpture at the site (Rajan, Selvakumar and Yatheeskumar 2009: 464).

At Adiyamanakottai, Period II dated second century to ninth century A.D has revealed a few antiquities and a brick structure with post holes at regular intervals. This might have been the raised platform of a building (IAR 1980-81: 65; 1981-82: 63). Modur in the Dharmapuri district has a period III dated to c. 500-1400 A.D. Coarse red ware pottery is associated with this period. This period also revealed terracotta figurines of Lord Ram and Mother Goddess, spindle whorls and shell bangle pieces, smoking pipes, hip-hops and graffiti marked pottery (ed. Sridhar 2005: 44). Mangudi in Tirunevelli district has revealed a stratum dated 600-1400 A.D. Excavations revealed

relics, potsherds, coins and five inscribed potsherds in Tamil Brahmi (ed. Shetty 2003: 51). Boluvampatti in the Coimbatore district was once a flourishing centre of trade activity. Excavations here revealed a terracotta seal with royal emblem bow, seated tiger and fish with an inscription 'Varman' of seventh century A.D. Brick structures were also exposed (ed. Sridhar 2005: 61; Rajan, Selvakumar and Yatheeskumar 2009: 92). Also Panayakulam in Dharmapuri district has revealed in excavations potsherds, terracotta figurines, bricks dated to the eighth century A.D, bones and herostone of seventh century A.D in Vatelluttu characters. The excavations proved a continued occupation of this site from the sixth to the twelfth centuries A.D (ed. Sridhar 2005: 63). In the Chingleput district, early medieval habitation sites were noticed at Kambarajapuram, Kambavariyapalaiyam, Peramannalur, Mulapattu and Pudupakkam. The site of Mulapattu yielded a terracotta human head and at Vadavur a bead manufacturing activity was noted here (IAR 1979-80: 68).

The artifacts are of iron (nails, rings) and gold bead at Perur and shell bangles at both these sites along with Modur. At Adiyamanakottai we have the use of iron in somewhat more varied forms. These are nails, beads, sickles, knives, spears and arrowheads. Steatite points are also found here.

Other sites where early medieval structural remains and habitations have been reported are the following.Govintaputturin Ariyalur district has revealed a early medieval Shiva temple (Rajan, Selvakuar and Yatheeskumar 2009: 67); Gudimangalam in Coimbatore district has a early medieval habitation mound and inscription (Rajan, Selvakuar and Yatheeskumar 2009: 95); Akilantapuram in Erode district has revealed an early medieval habitation mound (Rajan, Selvakuar and Yatheeskumar 2009: 191); Saluvankuppam in Kanchipuram district has rock cut caves and Pallava inscriptions of seventh-eighth centuries A.D (Rajan, Selvakuar and Yatheeskumar 2009: 255); Karai in Perambalur distr has produced an early medieval memorial stone inscription (Rajan, Selvakuar and Yatheeskumar 2009: 348); Neganurpatti in Vellore district has an early medieval habitation mound (Rajan, Selvakuar and Yatheeskumar 2009: 567).

Kanchipuram is the religious site of the region. The Buddhist *stupas* here are witnessed through structural remains of shrine chamber and inscribed potsherds

bearing the name of a Buddhist monk (IAR 1970-71: 32). At the site of Pallavamedu a structural phase IB assigned fourth-ninth century A.D during the early Pallava rulers produced amphorae jars of local manufacture and stone objects. The structural remains were the base of a votive stupa (Ramachandran 1980: 95-96). Mamallapuram in the Kanchipuram district exposed early medieval structures of rock cut caves, monolithic temples of the Pallava period dated seventh-eighth century A.D (Rajan, Selvakumar and Yatheeskumar 2009: 247; IAR1990-91: 63). At Kanchipuram we find a few semi-precious stone beads. These are agate, carnelian and amethyst. Mahabalipuram was a noted site of the Shore temple of the early eighth century A.D built by the Pallava rulers. It exposed free standing monolith rathas or stone replicas of structural temples. Sculptures from Mahabalipuram reveal the beginning of Pallava art in the seventh-eighth centuries A.D. The art form reached its peak in the later period under the Cholas (Chakrabarti 2006: 464, 470).

Raw Materials Available Within The Sub-Region

The presence of gold, copper, iron, steatite and shell have been noted on p. 155.

Amethyst

Various stones are found in the laterite rocks of the western and upland regions in the neighbourhood of Vallam in Tanjore district. The chief varieties are amethysts among other stones (Baliga 1957:6-7).

Raw Materials Available Outside The Sub-Region

KARNATAKA

Semi-precious stones

The varieties of semi-precious stones have been noted on p.147.

Epigraphic, Numismatic and Literary Linkages

The affinity between Tamil land and Karnataka is established by records of the conflict between the western Chalukya rulers of Badami and the Pallavas of Kanchi. The Western Chalukyas who ruled in extensive region in the Deccan from the sixth to the eighth century A.D were an indigenous Kanarese family who ruled from Badami

in the Bijapur district (ed.Majumdar 1954: 227). The Aihole inscription of the illustrated ruler Pulakesin II (c.610-11-642 A.D) elaborated his military conquests and down south Pulakesin II is known to have defeated the Pallava ruler Mahendravarman I and cornered him at the capital of his kingdom at Kanchi. This is further corroborated by the Pallava Kakasudi grant. It recorded that the western Chalukya ruler had penetrated to the heart of the Pallava kingdom (ed. Majumdar 1954: 238). The political conflict between the two prominent rulers of the south continued in the eighth century A.D as well. The Kanchi stone inscription of Vikramaditya II (Pulakesin's successor) records the conquest of this ruler over the Pallavas (eds. Krishnappa and Gopal 2000: 36). Another fragmentary record of the Chalukya monarch Kirtivarman II is found at the Rajasimheshvara temple at Kanchipuram (ed. Majumdar 1954: 247-48).

The Tamil country in the post-Gupta period had a wide spread. The number of urban areas is several. These are Uraiyur, Alagankulam, Kanchipuram, Tikkampuliyur, Alagarai and Kaveripattinam and Korkai. It is worth noting that these sites mostly yield sporadic early medieval structural remains. Some of them also produce artifacts such as terracotta figurines and pottery of this period. On the whole the artifactual yields from these sites are not much. Several smaller sites such as Boluvampatti, Modur, Mangudi, and Adiyamanakottai and so on are also reported with cultural material of the early medieval period. Manufacturing activity is found from Vadavur in Chingleput district where bead manufacturing activity was reported. Also, manufacture of shell artifacts is known from Tikkampuliyur in the Tiruchirapalli district. Resource procurement during this period was possibly done mostly from within. Some resources such as gold, copper, iron, amethyst, steatite and shell were locally available. Semi-precious stones such as agate and carnelian were possibly obtained from Karnataka region adjoining the Deccan Trap. The political connection between these regions is attested by the epigraphic records of the Chalukya and the Pallava dynasties. It is not improbable that such political connections also paved the way for movement of people and trade.

Kerala

Kerala lies on the western coast of Indian subcontinent between the Saahyadri and the Arabian Sea. The western coast also comprises the Konkan region, Karnataka coastal

area and Kerala /Malabar region (Singh 1971: 907). These texts of the early centuries A.D mainly refer to Chera and Pandyan kingdom and their chief exports such as stones of all kinds and so on. Mention is found of Muziris and Nelcynda and Cochin that were important trade centres in the early centuries AD in Kerala (Schoff 1995: 287). The *Raghuvamsa* of Kalidasa described the victory of Raghu over the Pandyan kingdom from the banks of the Kaveri to Cape Comorin including the Malabar Coast on the west. It further refers to the crossing of the Sahyadri range by Raghu to defeat the kings of Kerala and Konkana (Law 1985 reprint: 166-67). Archaeologically, the region of Kerala has mainly megalithic sites such as Porkalam, Cheramangar in Trichur district, and Kuppakolli in Wynad district and Naduvil in Kannur district. Pattanam was an important site of the Indo-Roman trade in the early centuries A.D. Sites with early medieval period habitation and remains are very few and will be surveyed in this section.

Character of Sites and Distribution of Manufactured Objects

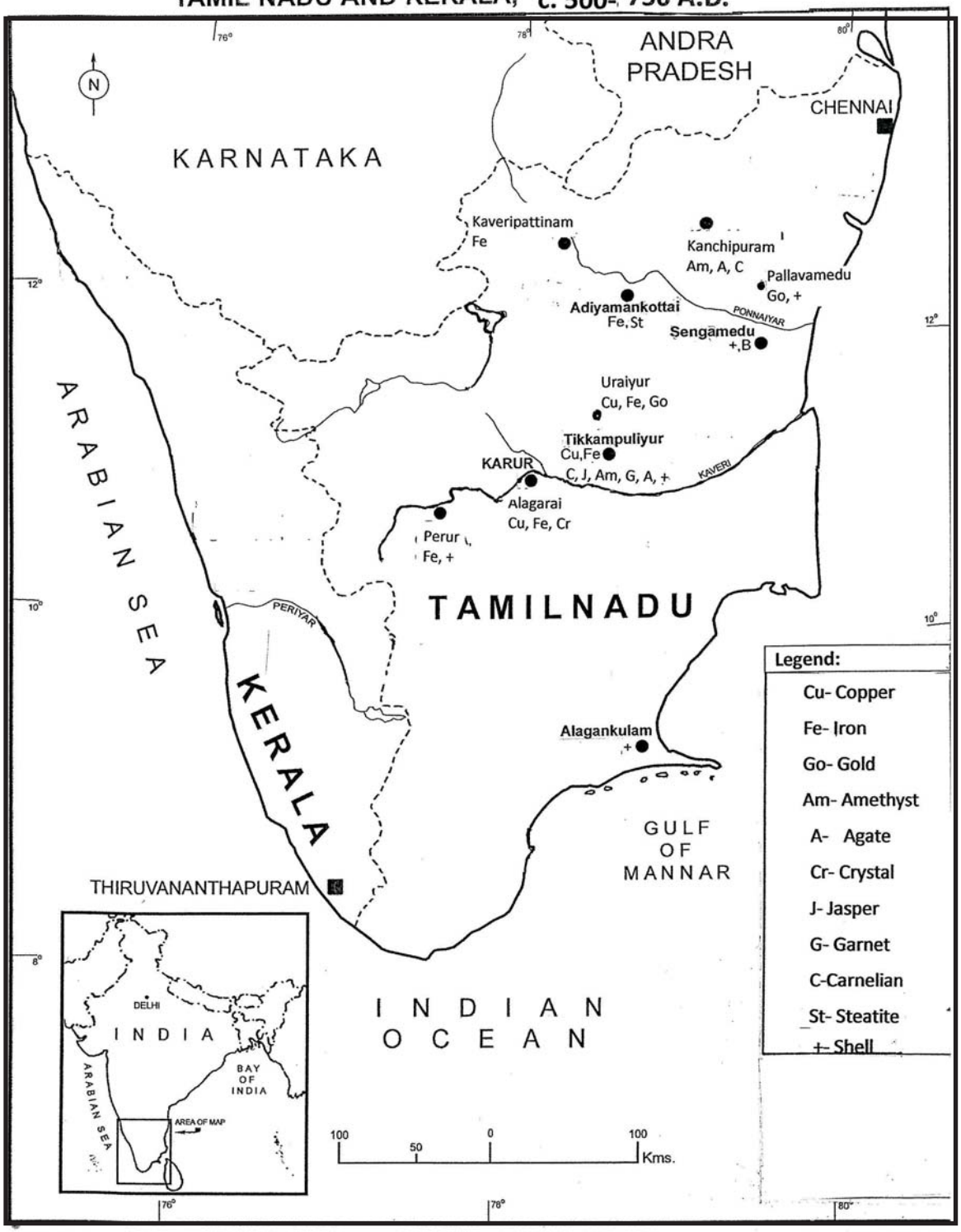
It is opined by Rajan Gurukkal (1999: 25-37) that the megaliths of Kerala, Sri Lanka and Tamilnadu are assigned to the period between mid-1000 BC and the beginning of the 1000 A.D on the basis of comparative archaeology. In this light a few sites can be surveyed again.

Pattanam south-east of Periyar river was the first early historic site in the Kerala region with strong evidence of an Indo-Roman trade in the early centuries A.D. Sherds of Italian sigillata and other pottery finds have been indicators of this connection from early historic levels. The excavations uncovered a number of artifacts such as pottery, beads indicating wide contacts during the early historic c. 300 B.C-500 A.D and early medieval period dated c.500-1000 A.D (Shajan, Cherian, Tomber and Selvakumar 2008: 1).

In the light of meager archaeological evidence for the early medieval period, it is prudent to fall back on other sources of information for the period. The Pugalur inscriptions give the names of the Chera rulers of the early centuries A.D. However Nagaswamy (1981: 37) observes that little is known about the Cheras between the third and the eighth centuries A.D when the Kalabharas, an obscure dynasty invaded the Tamil country. The epigraphical evidence gives a glimpse into the transformation

MAP-58

SITEWISE DISTRIBUTION OF RAW MATERIALS IN TAMIL NADU AND KERALA, c. 500- 750 A.D.



of socio-economic patterns after the post-Sangam age and the Kalabhara interregnum. Gurukkal (1999:36) refers to 4th-5th c.AD texts such as *Kilkanakku* that insist on the significance of peace, obedience and morality indicating the state of anarchy in the region during the period. The Pulankurichchi rock inscription of late fourth century A.D is the first known record of a *brahmadeya* village in Tamilnadu and indicates the growth of cultivation prior to the Kalabhara raids. The later inscriptions refer to the transformation of these brahmana households into corporate settlements and emergence of a new socio-economic pattern (Gurukkal 1999: 37). The early sixth century A.D grammatical treatise *Tolakapiam* (Porul) represents the early beginnings of a society primarily based on wet-land agriculture. A detailed study of the inscriptional sources is needed in order to understand the rejuvenation process of the socio-economic structure along with the rise of the imperial powers in the ninth century A.D. Archaeology is unfortunately silent on the process of revival.

CHAPTER 6

SUMMARY AND CONCLUSION

This study on the resource-use and access, settlements and patterns of communication in early India has aimed at understanding the trade between diverse regions for the procurement of raw materials and resources used in the manufacture of objects that are found in the different categories of settlements in the entire subcontinent from c.200 BC to 750 AD. For this purpose, a survey of the different sites has been done from various excavation reports and explorations. The different categories of sites in the entire subcontinent has been analyzed mainly on the basis of their structural and architectural remains. The use of different resources at sites has been understood by looking at the various artifacts reported from the sites in form of finished objects as well as unfinished ones. Only some sites have reported unfinished artifacts such as undrilled beads, slag, or flakes of stones and at times even workshops of artisans, metal workers along with tools, furnaces and implements from different periods. These have been noted as evidence of manufacture. Based on the raw material usage, the probable sources from where they could have been procured in each region and period have been studied.

In this concluding chapter I will examine the entire discussion from three angles:-

1. Changes that occurred in the size and spread of different categories of sites in each period as understood from the study of the structural remains.

2. Differences in the types of raw materials used in each period through the analysis of the material evidence and identification of possible the non-local resources.

3. The nature of interaction and contacts, primarily though not exclusively on the basis of these non-local raw materials.

The purpose is to present from the data cited n the previous chapters, a total picture of resource-use and access and communication patterns from c.200 BC to 750 AD.

The Northwestern Region and the Potwar Plateau

Taxila was perhaps the most prosperous city of the northwest due to the important trade routes passing through it. Among the three cities located within Taxila, Sirkap and Sirsukh belonged to tie of the Bactrian Greeks and Kushana rulers respectively. In the area, are also located several isolated monuments, mainly Buddhist stupas scattered all around the valley. Some of them are Kalawan, Kunala, Mohra Moradu, Pippala and Jaulian stupas. The monasteries comprised of a stupa-court and three large courts of cells and other monastic halls. These showcase the Buddhist architecture in the region. In the Kushana period, repairs of original walls were noted at Kalawan stupa. The high level of urbanization is evident from remains such as shapeless bits of iron and copper at Sirkap, and lump of gold, crucibles and coin moulds, uncut shell at Sirsukh. In the northwest province, there are several sites that were urban-cum-religious and were associated with Buddhism. Charsada was one such site that had remains of small buildings of typical diaper masonry. The discovery of a large number of Buddha sculptures strengthens its character as a significant Buddhist site in the northwestern area. Other sites in this region were urban-cum-religious sites such as Shahri Bahlol, Takht-i-Bahi, Shaikhan Dheri, Shnaisha Gumbat, Manikyala and Jamalgarhi. The association of urban centers with Buddhism is confirmed by the discovery of many monastic complexes, stupas and sculpture remains at those sites. The extent of sites in the post-Mauryan period perhaps made the northwestern region more significant.

Between the third and fifth century AD, Buddhist stupa sites in the vicinity of Sirsukh like Kalawan, Pipla, Jaulian were still flourishing. Lalchak and Bhamala were small monasteries dated to this period. In fact, Kalawan stupa was repaired and reconstructed during this period. The stupa and monastery of Kunala stupa was erected above the fortifications of the old Sirkap city. Several Buddhist stupa sites in the NWFP such as Charsada, Shahri-Bahlol, Damkot, Adnandheri, Marjanai and Chatpat continued from the earlier phase. Shnaisha Gumbat in the Swat region is a religious site of this period that yielded sculptures of Buddhist creed and also of the Hindu pantheon. Kashmir-Smast is the only excavated cave temple of the region with a Gupta inscription discovered near it. The sites in the Gupta period were perhaps more religious than urban in nature.

Indo-Gangetic Divide and the Punjab Plains

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze			
Brass	*		
Lead		*	
Gold	*	*	*
Silver	*		
Agate	*		
Amethyst			
Aquamarine Beryl			
Carnelian	*		
Chalcedony	*		
Crystal	*		
Emerald			
Jasper	*		
Jade			
Opal			
Pearl			
Ruby			
Quartz	*		
Quartz Crystal			
Garnet	*		
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli	*	*	
Sandstone			
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble			
Chert			
Limestone			
Faience	*		
Coral	*		
Ivory	*	*	*
Shell	*		*

Unlike the affluence of the sites in the previous periods, the condition of Buddhist monasteries around the city of Sirsukh and its structural remains in the post-Gupta period became dilapidated as understood from the excavation reports. Marshall reports evidence of vandalism by the White Huns in the form of the wreckage of monasteries and stupas. The travel account of Huien Tsang also speaks about the desolate state of the once thriving monastic complexes as Damkot, Shnaisha Gumbat among several others. However, a blacksmith's workshop at Damkot was found and is evidence of manufacture. Most sites were abandoned after the destruction by White Huns in the period following the fall of the Imperial Guptas. Excavations have yielded coins of the Hindu-Shahi dynasty in the sixth-seventh centuries and sculptures in bulk, from sites like Damkot, Shanaish Gumbat, Shahri Bahlol. Rock carvings from a site called Dir are among the relics indicating a revival after a brief period of abandonment. Sites such as Shahri Bahlol continued to be used with the Buddhist relics being replaced frequently by idols of Hindu creed. The scrutiny of evidence suggest that despite the large scale destruction by White Huns in the fifth century, some indications of revival in the sixth-seventh century under the Hindu Shahi rulers was evident from the excavated materials.

Resource-use in the period between c.200 BC and 300 AD reveals a variety of raw materials. The accompanying chart shows the resource usage in this period. Decorative objects and ornaments in metals like copper, bronze and iron indicates its use by different strata of people. These reflect upon the urban character of Taxila and a few sites of northwest such as Jamalgarhi, Shah-ji-ki-Dheri, Shaikhan Dheri, and Charsada and so on. These sites were well- established urban-cum-religious sites in this period. A huge variety of semi-precious stones such as amethyst, agates, beryl, carnelian, onyx, jasper, rock crystal, pearl, garnet, quartz, chalcedony, crystal, opal, oriental topaz, lapis lazuli and moonstone is seen in this period. Especially notable is the use of pearl beads at Taxila. Similarly, a wide range of ordinary stones have been used at Taxila and Charsada. This extensive variety of raw materials speaks of the opulence of the post-Mauryan period.

The resource procurement in this period indicates contacts with neighbouring and distant regions. Many of the raw materials like gold, iron, lead in metal, semiprecious stones as agate and chalcedony, ordinary stones as sandstone, marble, limestone, and steatite were available within the region. Raw materials procured from the neighbouring regions include amethyst and rock-crystal from Punjab, copper, marble,

beryl; garnet and faience possibly obtained from Rajasthan and shells from Sindh coastline. The long-distance contacts for procuring resources were significant in this period. Lapis lazuli and silver was procured from Afghanistan in the north, Turkestan in northwest most likely supplied jade to the region. Pearls were possibly procured from far south at Korkai in Tamil Nadu. The nature of contacts in this period indicates that resource utilization and procurement in this period was diverse.

In the Gupta period, the variety of resource-use remained at par with the earlier phase (See chart).The various non-local raw materials procured in this period was lapis lazuli, silver, ruby, and copper from Afghanistan in the north. Shell, coral were obtained from the Sindh coastline, beryl and garnets from Jammu- Kashmir and Punjab respectively. Given the spread of sites with Buddhist affiliation in this period, the procurement of non-local resources was a common feature. However, unlike the previous phase, contact with far south as seen in the use of pearl is no longer evident. Nevertheless, a variety of resource-use is clear from the discovery of several artifacts from the religious and urban sites of the period.

Unlike the moderate scale of structural evidence, resource-use in the post-Gupta period was substantial. Pearl and lapis lazuli, two non-local raw materials were used as beads. It points to the fact that long-distance trade might have been revived under the Hindu Shahi rulers in the sixth-seventh centuries. Shells continued to be procured from the Sindh coastline. Contact with far south was revived in this period as the only source of pearls was Korkai in Tamil Nadu in the south; lapis lazuli was obtained from Badakshan in Afghanistan. The pattern of resource procurement sketched in the post-Mauryan phase possibly continued in the post-Gupta period as well. What is striking for this period is the absence of grand urban and religious sites in terms of their structural remains. However, the material evidence indicates shrinkage of previously thriving urban and religious sites but not complete devastation. The pattern of resource-use and procurement also indicate revival in terms of artifact assemblage and trade networks.

Jammu and Kashmir

In the post-Mauryan period, the importance of this northern region increased as a gateway to Central Asia and China. This was facilitated by the control of the Kushanas over this region.

Jammu and Kashmir

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze		*	
Brass			
Lead			
Gold	*	*	*
Silver	*		
Agate			
Amethyst	*		
Aquamarine Beryl			
Carnelian			
Chalcedony			
Crystal			
Crystalline Quartz	*		
Jasper			
Jade			
Opal			
Pearl			
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone	*		
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble			
Chert			
Limestone			
Faience			
Coral	*		
Ivory	*		
Shell	*		*

The spread and nature of settlements in the post-Mauryan period reveals a mixture of urban as well as religious sites. Semthan stands out as an urban site with coins and sealings of Indo-Greeks, Saka, Parthians kings and coin hoard of Kushana rulers. Mud brick structures with diaper pebble walls were also exposed. Other urban sites of the region are Manda and Kansipur. Harwan, Ushkar and Ambaran are prominent sites which have structures of burnt brick masonry and votive stupas related to Buddhism. The importance of Buddhism under the Kushanas is evident at several sites in the area.

In the period 300 to 500 AD, Semthan seems to have continued as a habitation site but much of its urban character got diluted. This is what can be summarized from the absence of structural remains at the site. Instead terracotta human figurines with Gupta influence are found. The spread of Buddhist sites in this period is apparent with the continuation of Ambaran from the earlier period. Here an iron smith's workshop was found which was possibly attached to the monastic establishment. Several stupa and structural ruins associated with Buddhism were unearthed from sites such as Pandrethan, Ushkar, Sudh Mahadev, and Kotbal Anantnag. A substantial number of stone and terracotta human and animal figurines that reflected the style of Gupta art were found at these sites. The urban sites were less pronounced than the religious ones.

In the post-Gupta period, Semthan's the urban character is evident from the excavations that exposed a circular road from Kipin to Kashmir. It was was controlled by a powerful ruler of the local Karkota dynasty. Ambaran, the site of a Buddhist stupa remained prosperous with the large monastic complex. Several alterations and repairs of the stupa indicate its renewed importance in this period. In the post-Gupta period no non-local materials was possibly used. It seemed that sites like Semthan, Ambaran and Dard graves in the Leh valley continued to thrive as understood from the structural remains and artifact yield.

A diverse resource-use is seen in the post-Mauryan period. The accompanying chart displays the different raw materials used. The discovery of pearl micro beads at the Buddhist stupa site of Ambaran is noteworthy. Shell and pearls were non-local material that were possibly procured from Sindh in the southwest and the Tamil land in far south respectively. It perhaps indicates the distant network of resource procurement during this age. In the subsequent Gupta period, a change is seen in this pattern. Only metals such as

copper, iron, gold and bronze seem to have been used at most of the sites in form of copper coins and iron implements. That, metal production was connected with religious sites is evident from the find of a metal smith's workshop with iron slag and other implements at Ambaran. Bronze implements were found at Dard Graves in the Leh valley. The resource procurement pattern is similar to the earlier period. In the post-Gupta period the use of raw materials was restricted to copper, iron, steatite and shells. No semi-precious stones were revealed from the sites of this period. The resource usage seen in the three periods shows that all the three periods under study the usage of resources was maximum. The network in the post-Mauryan period was certainly wider than in the following ages.

Sindh

The region is mostly marked by several Buddhist stupas sites such as Mirpur Khas, Sawandi, Sudheranjo daro. The remains from these sites comprise monastic complexes, stupas from where relic caskets and coins of Kushana rulers. Stupa structures were revealed in the subsequent period of the Gupta rulers at Jhukar and Siraj-ki-Takri in upper Sindh. Mirpur Khas was a prominent Buddhist stupa site in this period. In fact, the ornamentation and decoration of the stupa was done in this period. At the same time Hindu elements had begun to infiltrate in the Sindh region in the Gupta era. Hindu sculptures like Brahma images were found near Mirpur Khas at Banbhore in Debal. In the post-Gupta age, Sindh remained dotted with Buddhist sites under the rule of the Hindu Rais. Mirpur Khas remained a well-established stupa site with changes seen in the use of elongated stupa on tablets in rows instead of Buddha images. In fact, many coins from the site had Arab inscriptions on them. It perhaps indicates that, worship of these stupas continued at least upto 715 AD. Other stupas of this period are Thul Rukan, Depar Ghangro near Brahmanabad, Tando Muhammed Khan and Jherrick. Sawandi and Brahmanabad were sites that are mentioned in literary sources like *Chachnama* of seventh century AD.

This study shows that during the post-Mauryan period, the resource usage was moderate. The chart lists the various resources that were used. The pattern of resource procurement indicates that while shells and agate were available within the region, the northwest in the neighbourhood was accessed for resources as gold, iron, copper,

Sindh

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron		*	*
Bronze	*		
Brass			
Lead			
Gold	*	*	
Silver	*	*	*
Agate			
Amethyst	*		
Aquamarine Beryl			
Carnelian	*		
Chalcedony			
Crystal	*		
Emerald			
Jasper			
Jade			
Opal			
Pearl			
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone			
Slate			
Steatite			
Soapstone	*		
Hornblende			
Quartzite			
Marble	*		
Chert			
Limestone	*		
Faience			
Coral			
Ivory	*		
Shell	*	*	*

soapstone and ivory. The region was full of Buddhist monastic sites and it would not be improbable to imagine the interaction between such sites in Sindh and northwest was an ongoing process. Resource procurement in the Gupta period remained similar. In the post-Gupta period raw material usage was very limited but the procurement pattern remained similar to the earlier phases. While shell and chert were procured from within, iron was obtained from the neighbouring northwest.

The region was active in all the periods under study as changes were seen in each period in sculptures at several Buddhist sites dotting the region. The resource procurement was mostly confined within the region and it was dependent mostly on the northwest for procurement of most metals, besides soapstone and ivory. This pattern remained as it is in all the three periods.

Baluchistan

The region in the lower Indus valley has a few sites dated to the post-Mauryan period. These are Mastung, Chaudhwan, Ark Ghundai and Tor Dherai in Loralai district. Most sites in this period were associated with Buddhism. Mastung has exposed in excavation, a mound that had a temple or citadel-like structure. Remains of a stupa were exposed at Ark-Ghundai. Massive enclosing walls were also noted near it. At Tor-Dherai Buddhist remains were found along with relic casket containing beads and jewel pieces. In the Gupta-post Gupta period, Mastung and other sites did not have structural remains dated between 300 and 800 AD. This was an apparent variation identified in the nature of sites from the earlier period. This is perhaps substantiated by account of Huien Tsang who describes the region as predominantly Buddhist, though thinly populated in this period.

Resource usage in the post-Mauryan period was not profuse. The summary of objects is clear from the resource-use chart. While some raw materials such as copper, iron, limestone, shells were available within, the region was most likely dependent on Afghanistan for acquiring silver and tin and northwest province for gold and crystal. As compared to the resource-use and access in other sites of Kushana period, it was minimal in this province. In both the Gupta and the post-Gupta levels artifact yield was minimal. Therefore, there was possibly no outside contact in these periods for procuring any raw material. It showed a desolate picture in terms of occupation as

Baluchistan

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*		
Iron	*		
Bronze	*		
Brass			
Lead			
Gold	*		
Silver	*		
Agate			
Amethyst			
Aquamarine Beryl			
Carnelian			
Chalcedony			
Crystal	*		
Emerald			
Jasper			
Jade			
Opal			
Pearl	*		
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx	*		
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone			
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble	*		
Chert			
Limestone	*		
Faience			
Coral	*		
Ivory			
Shell	*		

well as use of resources. Hargreaves (1981: 7) states that the site of Mastung was occupied for a continuous period before and after the Christian era. However, it was abandoned long before the Muhammedan invasion. The poor artifact yield and resource procurement pattern in the Gupta- post-Gupta period possibly hints at a bleak picture in this region when compared to the post-Mauryan period.

Uttarakhand and Himachal Pradesh

In the Post-Mauryan period the region came under the rule of the Indo-Greeks and Kushanas and tribal republics. This is known by the remains at sites such as Pathankot, Trippal and Hoshiarpur at the foothills of the Siwalik Hills, Lachori and Sarol in Chamba, and Dat Nagar in Simla. Many of these also yield coins of tribal republics such as Audumbaras, Kulutas, Yaudheyas and Kunindas. We do not find profuse structural remains from the region except a few sites such as Bharat Mandir in Dehra Dun where remains of houses, walls and floors were noted, Ranihat in Uttarakhand had remains of bricks and stones and a brick pavement. Brickbats of late centuries BC were also found. Coins, coin-hoards and pottery have been recovered from several small sites like Kanshipur, Virbhadra, Muni-ki-Reti among others. Coins from several sites perhaps indicate a well spread occupation in this period. However, the region does not have any large 'urban' site in this period. Nor is there any site that has 'religious' structures or artifacts. In the period between 300 and 500 AD, sites like Purola, Jagatgram in Uttarakhand continue from the previous phase. The structural remains at Bharat Mandir indicate a break from the earlier phase. Period II at this site is dated to the eighth century AD and is termed as 'reoccupied'. Bricks of the Kushana period, epigraphs and tribal coins were recovered in the Kangra region, whereas religious establishments are noted in the Gupta-post Gupta period in Kangra. On the one hand, we find the continuity of Kushana presence till the fifth century AD in the Kangra valley, on the other, Gupta influence in architectural style and sculptural patterns is clear from the material evidence. From the discussion above, it might be assumed that the Uttarakhand and Himachal region in the period between 300 and 500 AD was not as evenly significant as in the post-Mauryan phase. At the same time, they continued to be occupied amidst the changing political set up. In the post-Gupta phase, as a contrast to the earlier phases, a plethora of religious sites are reported in explorations. These are mostly temple complexes and shrines spread

Uttaranchal and Himachal Pradesh

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*		*
Iron	*		*
Bronze			
Brass			
Lead			
Gold			
Silver			*
Agate			
Amethyst	*		
Aquamarine Beryl			
Carnelian			
Chalcedony			
Crystal			
Emerald			
Jasper			
Jade			
Opal			
Pearl			
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone			
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble			
Chert			
Limestone			
Faience			
Coral			
Ivory			
Shell			

across the area. Some of them are, Brahmaur in Chamba in Himachal, Lakshmana devi, Chamba, Garhwal, Kangra and Kulu. In the Uttarakhand region temple complexes reported at Jogeshwar near Almora date from the eighth century AD. Unlike the previous centuries, religious sites were prominent in the subsequent ages. This is more profound in the frequent occurrence of such sites in the region. At Virbhadra Temple in Dehra Dun district, three stages of occupation were found in excavations. The last phase is dated 6^{th}-7^{th} c. AD. Inscriptional evidence is plenty in this period as we find epigraphs of rulers from different dynasties who ruled in the post-Gupta period. The survey of sites in the post-Gupta age gives the impression of an active region as far as temple building is concerned.

Resource-use in the post-Mauryan period was not much. The resource-use was less as compared to other Kushana sites in adjoining regions. Most of the raw materials such as gold, silver, iron, copper, and quartz crystals were available within. The region was possibly obtaining carnelian from Rajasthan in the west. As a contrast, remains from the Gupta period are mostly house structures, walls, floors, temple ruins and bricks and brickbats and so on. The artifacts recovered are mostly confined to coins, pottery and epigraphs. The artifactual yield in the period between 300 and 500 AD is negligible. It is clear that in this phase no raw material was obtained from outside the region. In the post-Gupta period, similarly, the resource-use is less. Most of them were available within the region. The resource usage from the fourth century AD onwards perhaps point out that the region was undergoing a transition in the political set up with the weakening of the Kushana power in the third century AD.

Indo-Gangetic Divide and the Punjab Plains

Post-Mauryan period layers are seen at some urban sites in this region such as Agroha, Ropar, Sanghol, Sugh, Thanesar and Purana Qila. Structures dug out in excavations are floors, brick walls of dwelling houses from Agroha and Sunet and a citadel-like complex from Sanghol which speak of urbanism. Stupa and monastic complexes as were found at Sugh and Sanghol with a large number of sculptures at the latter. A huge quantity of coin moulds of the Yaudheya dynasty was found at Sunet and perhaps even a mint was exposed at Sanghol known from the sheer number of Kuninda coins found there. Several small sites with mud brick structures and coins

Indo-Gangetic Divide and the Punjab Plains

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze			
Brass	*		
Lead		*	
Gold	*	*	*
Silver	*		
Agate	*		
Amethyst			
Aquamarine Beryl			
Carnelian	*		
Chalcedony	*		
Crystal	*		
Emerald			
Jasper	*		
Jade			
Opal			
Pearl			
Ruby			
Quartz	*		
Quartz Crystal			
Garnet	*		
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli	*	*	
Sandstone			
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble			
Chert			
Limestone			
Faience	*		
Coral	*		
Ivory	*	*	*
Shell	*		*

of ruling dynasties are also reported from different sites. The extent of the settlement in this age shows a widespread occupation of the territory with large urban sites, smaller sites and urban-cum-religious sites. It indicates prosperous settlements in this phase.

In the period between 300 and 500 AD some of the urban sites such as Agroha had some structural remains. Sites such as Ropar, Sunet, Sugh revealed terracotta figures, seals, coins dated to this period but no major structural remains. Some of the small sites are Dhalewan in Mansa district in the Punjab plains and Purana Qila, Budhyana, Duria, Kanarikhera, Palharaj, Saphaw, Umrapur in the Sharanpur district in the Indo-Gangetic plains. Artifact yield from most sites were coins of ruling dynasties, seals and sealing and terracotta figurines. Therefore, the nature of habitation in this period does not seem as extensive as the earlier era. In the post-Gupta age some of the urban sites of the region retained their character. This is true about Thaneshwar. It was the capital of the Pushyabhutis under Harshavardhana in the seventh century. Excavations revealed a defense wall and moat around the palace. A massive palatial building complex comprising several rooms was exposed here. Agroha too revealed brick structures and other artifacts from this period. Sunet showed diminished type of remains in the post-Gupta period. The houses were constructed of reused bricks. Unlike the earlier centuries, we do not find any small sites in this region from the post-Gupta period but this may be due to a lack of focussed work.

A variety of raw materials were used in the post-Mauryan period. Evidence of manufacture in this period is noted at urban sites where metal working industry was found at Sugh with remains of goldsmith's workshop and slag and Sanghol had an extensive shell working industry. What is interesting is that a local industry of a non-local raw material like shell was functioning at Sanghol. It points towards the flourishing nature of urbanization and trade network during this period. The region obtained a few resources as gold, tin, rock crystal and ivory from within. For other raw materials, neighbouring regions were accessed. It is possible that different types of semi-precious stones like garnet, jasper, carnelian, faience and copper was acquired from Rajasthan in the west. Silver, iron, sandstones were possibly procured from Uttarakhand, the hilly region in the north. Lapis lazuli was obtained from Badakshan in

Afghanistan in the north-west. The nearest source of shells was the Gujarat coastline in the west which was perhaps a very important link. The procurement of shells from Gujarat to Sanghol indicates its widespread external contact. In the period between 300 and 500 AD, the raw materials used were similar to the previous age, but not as abundant. The evidence of manufacture is known from the urban site of Sanghol where the shell industry continued. Also, the metal working industry continued at Sugh and Sanghol. The nature of contact in this period shows that Rajasthan continued as a resource region for metals. The contact with Gujarat and Afghanistan continued for obtaining carnelian and shell and lapis lazuli from the latter. The extent of the shell industry in this period was not as wide as the earlier phase.

Resource-use seems very scanty in the post-Gupta period. Most of the artifacts have been found from Thanesar and Agroha, two urban sites of this period. The structural remains like fragmented walls and pavements were noted and the artifactual yield was meager. Resource procurement indicated that with the exception of lapis lazuli, no other raw material was obtained from outside the region. The limited number of urban sites and minimal use of resources indicates a restricted spatial spread in this period. The lack of evidence on manufacturing activity in the entire region is noteworthy in this respect. Most of the activity revolved around a specific pocket within the region. This was at the site of Thanesar in Kurukshetra district. The site possibly developed into a political nucleus beyond which Agroha in Hissar district and few others showed signs of habitation. The character of settlements differed substantially than the post-Mauryan and Gupta period. The resource usage and pattern of procurement, however, remained similar but on smaller scale.

Upper Gangetic Plains

The region forms part of the great northern plains in the Indian subcontinent. There are several well known urban sites that are historically famous. These are Sonkh, Mathura, Atranjikhera, Ahihchhatra, Hastinapur and Sankisa. Most of the sites had elaborate structural remains in form of defense walls and dwelling houses, ring wells, tanks and wells. The imposing Kushana sanctuary such as the ‘devakula’ in the Mathura region speaks of the prosperity of this period. Equally abundant are the number of explored sites. These are Jajmau, Bateswara, Hulaskhera, Manwandih, Hulaskhera, Kalli

Upper Gangetic Plains

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze	*	*	
Brass			
Lead	*		
Gold	*	*	
Silver	*	*	*
Agate	*	*	*
Amethyst	*	*	
Aquamarine Beryl		*	
Carnelian	*	*	
Chalcedony	*	*	*
Crystal	*	*	*
Emerald			
Jasper	*	*	
Jade			
Opal			
Pearl			
Ruby			
Quartz	*		
Quartz Crystal			
Garnet			
Onyx	*		
Rock Crystal	*	*	
Quartzite		*	
Lapis Lazuli		*	
Sandstone	*	*	
Slate	*		
Steatite			
Soapstone	*		
Granite	*		
Feldspar	*		
Marble	*	*	
Chert	*		
Limestone	*		
Faience	*	*	*
Coral			
Ivory	*	*	*
Shell	*	*	*

Pachchhim, Chandpur and Kurali, Sanchankot and Newal. Mud-brick houses, dwelling units, floors and mud walls were exposed in excavations. The religious sites related to Buddhism are many. The well known were Mathura, Sravasti and Saheth-Maheth. Other such monastic sites were Oria, Sankisa, Bhuteshwar, and Musanagar. Stupa remains, pillar fragments, sculptural remains were found at these sites. A variety of settlements in this period display a broad occupation in the entire region.

Ahichchhatra, an urban site of the earlier phase, exposed remains of terraced temples, stupa, rathas all associated with Buddhism in the period between 300 and 500 AD. Mathura, the seat of Kushana power in the earlier period was a flourishing site in the Gupta period as well. Excavations revealed several religious edifices of Buddhist, Brahmanical and Jaina images from here. The brick built complex of Kankali tila was a Jain establishment of this period. At Sonkh rebuilt structures and several artifacts display its continued relevance in this period. The other sites in the region with layers dated to the Gupta period are Hulaskhera, Musanagar, Trilokpur and Manwandih, Kalli Pachchhim and Katinagara. Most of these sites yielded sculptural and ceramic remains of this period except Hulaskhera, where a citadel-like structure was unearthed. Apart from these, a whole lot of small sites have Gupta period layers and artifacts. The religious sites of Sravasti, Sankisa, Bhuteshwar, and Indrapura showed the continuance of Buddhist association. Most of them had stupa remains, railings, pillars and temple complex dated to this period. The sculptural fragments and sealings recovered from these sites display their importance in this period as well.

In comparison, a survey of different sites in the post-Gupta period shows a limited number of urban sites. The few that continued from the previous times are Ahichchhatra, and Sonkh. Excavations at Ahichchhatra expose a long chronology at the site with temple remains dated to this period. The remains at Sonkh speak of destruction with dilapidated walls and other structures. Reuse of bricks is frequent and artifact remains are only pottery fragments. Saheth-Maheth showed rudimentary house structures in this period. Kalli Pachhim, a small site from the earlier phase also had mud floors and burnt patches as the structural remains. A survey of sites in the entire region in this period indicates that the famous political centre of Kushana period, Mathura does not figure in the archaeological repertoire of the post-Gupta period.

Resource usage in the post-Mauryan period was abundant. That settlements in the regionwas well-established in this period is also indicated by the evidence of manufacture from some sites. Iron was worked at Sravasti, lumps of slag were found at Hastinapur and Kalli Pachhim. Besides, coin moulds from Sonkh and bead manufacturing at Atranjihera is also notable. Given the exhaustive nature of resource-use in this period, acquiring them required an equally elaborate network. As it is, the region had very few resources of its own. Gold, agate, ivory and sandstone were available within, most other resources were obtained from outside. To the north, Uttarakhand and Himachal were possibly accessed for obtaining iron, crystal, limestone, copper and iron and slate. Rajasthan was an important resource region that could have supplied zinc and marble to the Upper Ganga Plains, amethysts were available in neighbouring Punjab and lapis lazuli was most likely obtained from Afghanistan. On the whole, the diverse nature of resource-use is evident in this period. The pattern of procurement was equally diverse as most of the neighbouring regions were tapped for procurement of these resources. In the Gupta period (300-500 c. AD), the most exhaustive artifacts were found at Sonkh. The diverse nature of resource-use continued in this period as well. Evidence of manufacture is seen at Sravasti and Kalli Pachhim where lumps and slag of iron have been found from this layer. The diversity is most pronounced in the use of different semi-precious stones notably at urban sites like Sonkh, Hulaskhera, Ahichchatra and Sravasti. Resource procurement in this period followed a similar pattern as earlier. Gold, agate, sandstone and ivory were available within. Most other resources were acquired from outside the province. While amethysts were obtained from central India, several resources were obtained from neighbouring Rajasthan. The procurement of lapis lazuli possibly continued in this period from far off Afghanistan. But the resource procurement was sketchy for the post-Gupta period as the quantity and variety of resources used drastically diminished in this age. Rajasthan and Gujarat remained regions for acquiring iron, copper, chalcedony, silver and shell respectively. The overall scenario in the region was of scanty remains and minimal resource-use.

The spread of habitation in the three periods under study show different trends. While we find extensive spread of sites in the post-Mauryan and Gupta periods, the scenario

changes in the post-Gupta period. The spatial spread was not as wide as earlier times. The number as well as nature of urban sites were drastically less and dilapidated. Well established urban sites for instance like Mathura find no mention in the archaeological record of resource procurement of the post-Gupta times. Also the scanty use of raw materials perhaps showed shrinkage in the resource acquisition network.

Middle Gangetic Plains

The Middle Gangetic plains were the hub of political activity since early times. In the post-Mauryan period, structural and artifactual evidence is abundant in the province with plenty of large urban sites as Kumrahar, Pataliputra, Kausambi, Champa, Bhita, Aktha and Sringaverpura to name a few. Structural remains like defense fortifications, burnt brick house complexes and ring wells have been exposed at most of these sites in the region. The vastness of the habitation is equally evident from the number of small sites like Balirajgarh, Buxar, Chechar, Kheradih among many others. Structural and artifactual remains are rich at these sites. The religious sites in the region are known from their architectural remains in form of stupas, railings, pillar remains and sculptures. Piprahwa-Ganwaria, Sarnath, Bodh-Gaya and Taradih are the well known ones besides many other such sites. In the subsequent phase, settlements continued strongly as earlier times. Urban sites such as Vaishali seem to have become district headquarters under the Guptas. A citadel complex and other large structural remains speak of its grandeur in this period. Sites such as Bhitari in Ghazipur appear to be urban-cum-religious sites. A large residential establishment and temple remains were exposed in the excavations dated to this age at Bhitari. Kumrahar is a site where height of the rampart was raised. Chirand though, has a conspicuous absence of the Gupta level. Sites like Nalanda flourished in this period where several monasteries, stupas and shrines were exposed in excavations. Sultanganj in Bhagalpur district is another site that emerged in this period. The survey reveals continuation of earlier sites as well as emergence of new sites that are numerous and rich in their structural and artifactual remnants. In the post-Gupta period, Kumrahar, Rajgir, Nalanda, Vaishali, Kausambi, Aktha near Varanasi, Nalanda and Agiabir are some of the famous urban sites that continued from the Gupta period. Many of them were urban-cum-religious sites with extensive structural remains associated with Buddhism. The other sites in the region are Apsadh, Antichak, Jaipurgarh, and Saran that yielded

Middle Gangetic Plains

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze	*	*	
Brass			
Lead			
Gold	*	*	
Silver	*	*	*
Agate	*	*	
Amethyst	*		
Aquamarine Beryl			
Carnelian	*	*	*
Chalcedony	*	*	*
Crystal	*	*	
Emerald			
Jasper	*	*	
Jade			
Opal	*		
Pearl	*	*	
Ruby			
Quartz	*	*	*
Quartz Crystal			
Garnet	*		
Onyx			
Rock Crystal	*		*
Sardonyx			
Lapis Lazuli	*		*
Sandstone		*	
Calcite	*		*
Steatite	*	*	
Soapstone	*	*	
Hornblende			
Slate		*	
Marble	*	*	
Chert	*	*	
Limestone			
Faience		*	
Coral	*	*	
Ivory	*	*	
Shell	*	*	

sculptural and other artifactual remains dated to this period. Asapur in Kashi-Rajghat sector is a small site that exposed sculptures that were unfinished and were carved at this site itself. Garhwa is a temple complex dated to this period with elaborate sculptural remains. Several other small sites dated to this period have revealed architectural, sculptural and artifactual evidence of continuity. In all, it can be assumed that there was a profusion of different types of sites in the post-Gupta period. While many of the urban and other sites continued from earlier times, there were several other small sites that came up in this period as understood from their archaeological remains.

Resource usage is exhaustive in the post-Mauryan period. Evidences of manufacture have been noted at quite a few sites of this period. Bead making industry was seen at Rajghat and agate bead manufacturing was noted at Prahladpur near Varanasi. Siswania near Basti and Khachgaon near Atrauli had workshops of blacksmiths and coppersmiths. Given the diverse resources used in this period, it was quite natural to have an extensive resource procurement mechanism. Besides utilizing several resources from within, non-local resources such as agate, chalcedony, sardonyx, quartz, beryl, garnet and opal were procured from the rich Chotanagpur Plateau in the south. Copper, gold, galena, iron, slate and tin were the other raw materials that were acquired from this area. Rajasthan was probably accessed for marbles, Tamil Nadu in the far south for pearls and lapis lazuli from Afghanistan. The pattern of resource acquisition in this period indicates that the middle Gangetic plains were procuring most resources from the nearby Chotanagpur Plateau. The long distance contact and diverse resource-use of this province speaks of the affluent character of settlements in the post-Mauryan period.

In the Gupta period, the style of resource-use remained similar to the previous period. The resource-use chart shows all the raw materials used. Evidence of manufacture is found at Bhitari where a blacksmith's workshop is found. Bronze smelting was noted at Nalanda, The variety of semi-precious stones remained the same in this period as well. The resource procurement remained exactly identical to the previous period with all varieties of semi-precious stones from Chotanagpur plateau; pearls from Tamil Nadu, shells and coral from the lower Gangetic plains and lapis lazuli from

Afghanistan. The region in this period was very well spread and was thriving as indicated by the resource procurement network.

In the post-Gupta period, many of the urban sites continued. Most of these yielded structural and sculptural remains from this period. Iron smelting tools and implements and slag were discovered at Oriup in Bhagalpur and Kahatilwar. Utilization of raw materials was not extensive as compared to the previous era. The pattern of resource procurement in this period showed that besides the raw materials available within, the non-local resources were obtained from the Chotanagpur plateau and the Central highlands. The lower Gangetic plains were the nearest zone for obtaining shells. A brief survey of the utilization of resources and their procurement mechanism shows that sites in this period had impressive structural, architectural and sculptural remains.

Lower Gangetic Plains and the Chotanagpur Plateau

In the post-Mauryan period, cultural material is found at many urban sites in the region. These are Pandu Rajar Dhibi, Mangalkot, Chandraketugarh, Hadipur, Kankandighi, Kotasur and Rajbaridanga. All these sites have revealed large structural remains of this period and were important urban centres in this province. Bangarh, an important administrative centre, has revealed several structural remains like large sized residential complex and a rampart wall. Excavations have unearthed several mounds with structures associated with Buddhism. Other urban-cum-religious sites were Kandaran in Malda, Rajbaridanga in Murshidabad where the ruins of the Raktamatrika monastery have been exposed. Fortified enclosures were discovered at Mahasthangarh, the ancient site of Pundravardhana. In the Chotanagpur plateau, Saradkel in Ranchi district was marked with extensive structural remains, defense wall and remains of residential buildings. In the subsequent period, between 300 and 500 AD, several urban sites continued with full vigour. Bangarh revealed elaborate structural remains like brick rammed floors and mud brick defense wall and a plethora of inscriptions and sculptures from this period. Rajbaridanga, the site of Raktamatrika monastery exposed the stupa of the earlier period along with stucco heads and sculptures of the Gupta period. Mahasthangarh became an important administrative unit under the Gupta rulers. Chandraketugarh was equally thriving this period as an urban centre. Several small sites were exposed in the region that had remains from the

Lower Gangetic Plains and the Chotanagpur Plateau

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze			*
Brass			
Lead			*
Gold	*	*	*
Silver		*	
Agate	*		*
Amethyst	*		
Aquamarine Beryl			
Bloodstone	*	*	
Carnelian	*		*
Chalcedony	*	*	*
Crystal	*		*
Emerald			
Jasper	*	*	*
Jade	*		
Opal			*
Pearl		*	
Ruby			*
Quartz	*	*	
Quartz Crystal		*	
Garnet			
Onyx	*		
Rock Crystal			
Sardonyx			*
Lapis Lazuli			
Sandstone		*	*
Basalt			*
Steatite	*		
Soapstone		*	
Hornblende			
Quartzite			
Marble	*		
Chert		*	*
Limestone			*
Faience			
Coral			
Ivory	*	*	
Shell	*	*	

Gupta period. Kanakandighi, Rangamati and Mainamati, Beluti were some of the sites that had well-established layers of the Gupta period. However, Gupta period remains are not known beyond the third century AD for Saradkel in Chotanagpur Plateau.

In the post-Gupta period, many urban sites like Chandraketugarh, Rajbaridanga, Paharpur, Baigram, Bangarh and Mahanad continued in grandeur. Mahasthangarh, an administrative site since early times, had two parts in the fortification in this period; the Gupta and the Pala period. A massive enclosure wall exposed building remains of four periods from late Gupta to early medieval times. The account of Huien Tsang speaks of the city as 'thickly populated'. Bangarh in Rajshahi division was a prosperous city in the Pala period as massive structures and rampart walls were unearthed in this period. Excavations at Chandraketugarh also exposed a fortified township of the Pala period that was important site in this period. Pakhanna in Bankura district became an urban centre in this period where evidence of burnt mud wall of circular form was found. Rajbaridanga, continued to flourish in the post-Gupta period as understood from the excavations. Other religious sites such as Paharpur, Beluti etc. also continued from earlier stages. On the whole, the remains of this period at different types of sites in the region showed that the spatial spread in this age was at par or perhaps even more prosperous than the earlier times.

The resource-use in the period between c.200 BC and 300 AD was moderate and can be understood from the chart. Most artifacts have been recovered from large urban sites. Despite the widespread nature of settlements in the post-Mauryan period the raw material usage seems limited in this period. Evidence of manufacture is found at Mangalkot where crystal beads were found in an unfinished state along with flakes of stones indicating local manufacture of the beads. Also, an elaborate iron smelting industry was discovered at Saradkel in the Chotanagpur sector. Usage of resources indicates that copper, iron, gold, shells were available within. Several raw materials were available in the Chotanagpur area. Most of the semi-precious stones were procured from there besides gold and iron. The raw materials that were acquired from outside were sandstone from the middle Gangetic plains and marble from central India. Lapis lazuli is not used in this period. Instead jade occurs which was possibly procured from Turkestan in the northwest. It signified the existence of a long-distance network in this post-Mauryan phase. In the

Gupta period, the resource-use was less as compared to the previous period. The artifact yield was more in terms of sculptures and terracotta figurines than use of diverse raw materials. Mangalkot continued to manufacture crystal beads. Iron slag at Beluti and shell manufacture was found at Chandraketugarh. The resource procurement in this period shows that most varieties of semi-precious stones were acquired from neighbouring Chotanagpur region and lead, silver and sandstones as well. No raw material was used that could be procured from far away. The spread of the sites and the nature of settlement in the Gupta period were wide. However, this does not come forth from the study of resource-use and pattern of procurement.

The post-Gupta period in the Lower Gangetic plains had sites using several raw materials. Copper and iron were profusely used in this period. The variety of semi-precious stones was similar to the post-Mauryan period. The evidence of manufacture is seen at Parharpur where iron smelting was extensively done. Singhbhum in the Chotanagpur Plateau has evidence of extensive copper working along with slag. The procurement of resources in this period showed that besides use of raw materials like copper, iron, gold and shell and tin, available within, only sandstone was procured from the Chotanagpur region. It seems that no raw material was procured from far off zones in the Gupta-post-Gupta period. The trend of resource-use shows that most resources in the three periods were obtained from the Chotanagpur region and the middle Gangetic plains.

Northeast India

The territory lies in the easternmost part of the Indian subcontinent. In the post-Mauryan period, we come across two sites that were well excavated and yielded cultural assemblage dated to this period. Sekta in Manipur and Vadagokugiri in Meghalaya are the two excavated sites affiliated to the Buddhism. Sekta was a megalithic site that yielded urn burials from late centuries BC later became associated with Buddhism. Vadagokugiri had remains of a brick rampart with moat and an outer fortification dated to this period. At Bhaitbari, habitation prior to the stupa ruins was found. At Guawahati, a reinforced rampart was discovered that is dated to this period. Even though we do not find massive structures from any sites, the spread of habitation is nevertheless apparent in the various sites that have yielded pottery and terracotta and other sculptural remains from the period. Nalbari, Tezpur, Surya Pahar are all in

Northeast India

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze	*	*	*
Brass			
Lead			
Gold			
Silver			
Agate			
Amethyst			
Aquamarine Beryl			
Carnelian		*	*
Chalcedony			
Crystal			
Emerald			
Jasper			
Jade			
Opal			
Pearl			
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone			
Slate			
Steatite			
Soapstone			
Hornblende			
Quartzite			
Marble			
Chert			
Limestone			
Faience			
Coral			
Ivory			
Shell	*		

Assam. In the Gupta period, the remains from Sekta in Manipur were not more than pottery dated between 200 and 400 AD. Reports date the settlement at Bhaitbari in Meghalaya from early era in Christian centuries to eighth-ninth centuries. We do not find reference to structural remains in this site dated to the Gupta period. Tezpur in Assam dates back to the post-Mauryan period and expanded in the Gupta period. Several sculptural and architectural remains were excavated that date back to the Gupta period. Even though sporadic remains are found at some sites of this province that date to the Gupta period, the nature of habitation in this period remains sketchy. In the post-Gupta period, the various sites discussed in earlier age begin to flourish. Much of the information for this period is known through epigraphic and sculptural evidence. Excavations have revealed that most sites showed structural evidence in the post-Gupta period from the sixth-seventh centuries onwards. For instance, the Dah Parvatiya temple at Tezpur, Assam is the most discussed. The elaborate carvings on the door frame give a glimpse of the Gupta art that influenced it. Ambari in Assam yielded large brick remains and drain pipes hinting at the growth in this period. Nalbari revealed remains of two temples in this period. A large quantity of sculptures too was recovered from there and is presently displayed in the Guwahati museum. Vadagokugiri was a Buddhist stupa site that continued in this period. Dubarani in Assam had structures of brick dated to this period. It was a religious site. Several other sites as Surya Pahar, Panch Pandava, Urvasi island, in Guwahati , Unakoti and Paglatek in Tripura are religious sites of this period that had temples and stupa remains dated to this period. Not only did sites continue to prosper in this period, several new sites especially religious ones emerged with the influence of Gupta art and Pala art is clearly visible.

Resource-use in the post-Mauryan period did not reveal major quantities. The sites discussed above clarify the fact that the region was better known through epigraphs, architectural and ceramic remains. Whatever little raw materials were used like copper and iron were available within and the nearest source for shells was the Bengal coastline from where it could have been obtained. In the Gupta period, no definite changes are noted in the sites of the earlier period. Resource usage continued to be minimal with the use of copper and iron from within the region. The use of carnelian beads at Sekta in Manipur is interesting. Though carnelian was available in the nearby

Chotanagpur Plateau, it might not be out of place to assume that the northeast region was in touch with Gujarat in the west through the Gangetic plains as a traditional network for obtaining carnelian. This is based on the observation that pottery found at Sekta, Bhaitbari and the Gangetic plains bear resemblance and could have come from there to the northeast region via trade and movement of people. Therefore the region was very much within the fold of the Gangetic plains. Also, most sites that did not flourish in the post-Mauryan centuries, developed in this period. Dah Parbatiya, Vadagokugiri, Tezpur are some of them. Growth of new sites was also seen with Nalbari, Dubarani and Ambari in Assam. Another sign of the political growth in the region was the use of gold coins at Tripura and Borvita in Assam. Resource procurement remained similar to the Gupta period with the continued link with Gujarat for the procurement of carnelian. Therefore it can be assumed that the northeast clearly flourished and developed during the sixth-seventh centuries and only in the later ages reached the peak of urbanization.

Orissa

The region was famous in the Mauryan period as an administrative unit and the Kalinganagara battle that transformed emperor Asoka. In the post-Mauryan period sites that have been well excavated are Sisupalgarh and Jaugada. Structural remains of houses and defense walls were unearthed in excavations at Jaugada, Sisupalgarh. There are few explored sites like Nehna, Manikapatna (a port), Komna, and Palur. These did not have large structures but produced significant artifacts like coins of ruling dynasties, Roman amphorae, slag remains and rouletted ware. Dhauli had an earthen fortification. Antiquity of sites like Komna goes back to the megalithic period. The expanse of settlements was more pronounced in the spread of Buddhist sites that grew in the latter periods. Structures associated with Buddhism were found at Radhanagar, Lalitagiri, Uayagiri. Also several small sites were discovered that revealed cultural material from this period. Some of them like Langudi, Dantapura had stupa and monastic structures. The habitation in this period was perhaps well spread out and comprised urban, small and religious sites substantially.

In the subsequent period, Sisupalgarh continued as an urban site. The structures exposed were fortifications, gateways and guardrooms which seem to be a

Orissa

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze		*	
Brass			
Lead	*		
Gold	*		*
Silver	*		*
Agate	*		
Amethyst	*		
Aquamarine Beryl			
Carnelian	*		
Chalcedony	*		
Crystal			
Emerald			
Jasper			
Jade			
Opal			
Pearl			
Ruby			
Quartz		*	
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone		*	
Slate			
Steatite			*
Soapstone	*		
Hornblende			
Quartzite	*	*	
Marble		*	
Chert		*	
Limestone		*	
Faience			
Coral			
Ivory	*		
Shell	*		

continuation from the earlier period. Dantapura in the period between 300 and 500 AD seems to have grown bigger as understood from the structural remains. Two brick stupas and a rampart were noted in this period. Similarly Asurgarh, a small site exposed circular brick structures when excavated. Smaller sites like Nehna, Maraguda, Budhigarh continued from the earlier times and some of them had stupa remains dated to this period. Maraguda revealed a huge Siva linga along with Buddhist structures. The dominant feature of settlements in this region was the expansion and spread of large Buddhist sites as Radhanagar, Lalitagiri, Ratnagiri, Udayagiri and Khandagiri in and around the Cuttack district. Several of these were the rock-cut caves that display the prevalence of Buddhism in this period. They are marked by numerous votive stupas, sculptures, medallions, pillar railings and other architectural pieces associated with Buddhism. In comparison to the earlier period, the growth in the Gupta period was manifold. Several other small stupa sites also continued from the early centuries AD. In the post-Gupta period, structural remains were seen at some of the sites discussed above. Dhauli, Manikapatna, Nehna, Asurgarh all continued. At Dhauli and Asurgarh remains of a seventh century temples were found. Manikapatna grew substantially from the earlier periods and signs of proper habitation such as ring wells and potsherds were exposed. These sites also yielded structures such as stupa remains, temple remains dated to the seventh century, coins of ruling dynasties and copper plate inscriptions. Besides the numerous small religious sites in the region, the monastic sites of Udayagiri, Khandagiri, Ratnagiri, Lalitagiri all continued to prosper in this period. The remains of Buddhist structures were numerous besides other remains as votive stupas, caskets and sculptures of the Buddha in various forms. It can be convincingly said that the region’s prosperity is wvident from the large Buddhist sites that were spread all over the geographical expanse.

Resource-use in the post-Mauryan period, showed a varied use of iron at urban sites as Manikapatna and Sisupalgarh. Evidence of the manufacture of beads is seen at Asurgarh. Iron slag and tools for manufacturing were also noted at Manamunda and Asurgarh in this period. This possibly explains the large number of iron artifacts in the region. The variety of semi-precious stones was not much despite the presence of large religious and urban sites. The pattern of resource procurement shows that many

raw materials were obtained within the region. These were gold, lead, silver, copper, quartzite, shell and ivory. A few varieties of semi-precious stones like crystal, agate, chalcedony, amethyst were most likely procured from the neighbouring Chotanagpur area where they were available. In the subsequent period, the resource-use seems much less despite the evidence of a sprawling habitation. The number of iron objects is not as abundant as the previous age. The evidence of manufacture is found at Budhigarh that has iron slag along with iron objects. A bead making mould was recovered from Asurgarh though not many beads were found from the entire region. The resource procurement was similar to the previous period as far as raw materials from within is concerned. Most likely, no raw material was obtained from outside the region. In the post Gupta period, the use of different resources is even more scanty. As a contrast to the earlier periods, copper and iron use is very scanty. There is hardly any use of semi-precious stones in this period. The ones that are found at a few sites have not been specified in the reports. The spread of flourishing Buddhist sites in the region have led to the discovery of gold, silver and steatite caskets which are not found in the previous age. Evidence of manufacture comes forth at Maraguda in Nuapada district where iron slag was found. But we do not find iron artifacts in abundance as the previous age. The resource procurement in this period was similar to the Gupta period, as most of the resources were available within the region.

The extent of urban and small sites and Buddhist sites in all the three periods is broad. However after the post-Mauryan period, the resource-use and procurement was not impressive in the Gupta and the post-Gupta times. The magnificence of the various rock-cut caves spread over a wide area is demonstrated in sculptural and architectural beauty. It was only in the eighth-ninth centuries that the Buddhist sites became huge monastic establishments. This prosperity of the Buddhist sites and some of the urban sites is not reflected on the artifactual repertoire of the region. A study of the resource procurement in the three periods does not indicate major long-distance connections for procuring raw materials.

Rajasthan

Bayana was the seat of power of the tribal republic of Yaudheyas. Sambhar had structural remains in the form of dwelling houses with central courtyard. Bairat,

Rajasthan

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	
Bronze	*		
Brass			
Lead	*		
Gold	*	*	
Silver	*	*	*
Agate	*		*
Amethyst	*		
Aquamarine Beryl	*		
Carnelian	*		
Chalcedony	*		
Crystal		*	
Turquoise	*		
Jasper	*		
Jade			
Opal			
Pearl			
Ruby	*		
Quartz	*		
Quartz Crystal	*		
Garnet			
Onyx			
Rock Crystal	*	*	
Sardonyx	*		
Lapis Lazuli	*		
Turquoise	*		
Sandstone	*	*	
Slate			
Steatite	*	*	
Soapstone			
Hornblende			
Quartzite			
Marble			
Schist			*
Limestone			
Faience		*	
Coral			
Ivory	*	*	
Shell/ Conch	*	*	

Nagari, Rang Mahal, Rairh and Nagar were urban sites in this region that had structural remnants of this period. Besides, numerous coins of ruling dynasties and sculptures dated to this period have been recovered. Sambhar and Rairh had evidence of iron smelting in form of slag and iron refuse pointing to the existence of industrial activity at these sites. The small sites of this period were not many.

There were many sites that yielded cultural material of the Gupta period in the region. Several pottery and sculptural remains that were influenced by the style of the Gupta art were also found here. Sambhar, Nagari, Rang Mahal has stone fortification and burnt brick structures similar to the earlier phase. Some of small sites in the province also produced terracotta figurines of this period. These were Boondewali Doongri, Dhaliya, Vijaygarh. Many of these sites also had coins and seals of Gupta monarchs which indirectly point to the influence of the Guptas in the region.

In the post-Gupta period, not many urban sites are dated to this period. At Nagari, the Hathi Bada mound has remains of this period. Sambhar is a site that had structural and other artifactual remains in this period that indicate its continuance in all the three periods. Excavations at Bairat showed a gap after the early centuries AD upto medieval period. The spread of sites in this period seems restricted but at the same time, Gupta-post-Gupta coins, terracotta and sculptures were found at many small sites in the region.

Resource-use in Rajasthan in the post-Mauryan period is ample in form of copper objects, iron weapons and implements. The variety of semi-precious stones at the site reflects on the diverse nature of resource-use in this period. Non-local material like lapis lazuli is present at urban sites. As compared to gold, silver is less used in coins. The profusion of iron objects can probably be understood from the presence of iron smelting industry at Rairh, Sambhar and Noh. Resources were more abundant in the urban sites and rest of the sites mostly yielded coins, terracotta figurines and sculptures. As for resource procurement, Rajasthan was a region rich in different kinds of raw materials. Metals like silver, lead, iron, copper, gold and tin were available within the zone. A variety of semi-precious stones were found within the region. These are beryl, turquoise, quartz, ruby, rock-crystal, jasper, agate, chalcedony, carnelian among others. The resources that were most likely procured

from outside were shells from neighbouring Gujarat and lapis lazuli from Afghanistan in the northwest. The volume of resource procurement was limited but there was no dearth of artifacts used in this period. The spread of different sites in the region was wide and is known from the resource-use pattern in the post-Mauryan period. In the Gupta period, the resource-use is noticeably reduced than the earlier period. The use of semi-precious stones is rather less. We do not find the use of lapis lazuli in this period which possibly indicated the absence of long-distance trade for procurement of resources. Shell and conch beads were non-local material used which possibly continued to be obtained from neighbouring Gujarat like the previous period.

In the post-Gupta period the resource-use seems reduced. Whatever was recovered was mostly in form of coins and terracotta sculptures. The resources used like copper, silver, agate, sandstone, schist were all available within. No raw material was procured from outside the region. It indicates the lack of sites with cultural material from this region and also its restricted nature in the post-Gupta period.

Gujarat

The region has a number of urban sites of the post-Mauryan period. Dhatva has yielded Roman amphorae indicating a long distance network at the site. Nagara and Broach were port towns since antiquity. Structures like mud rampart, brick pavements and plan of early historic towns were found at sites like Shamalaji, Lothal, Hathab, Amreli, Ajabpura, Sanand and Dwarka. These sites revealed habitation deposits of this period. Several sites in the region have been explored. Some of them are Rajkot, Dharol, Valabhi, Padri, Timbarva, and Kadiya Dungar and Karwan. These were rich in structural and artifact yield from this level. Several religious sites have been found in the region. Bet Dwarka is a famous temple site of Lord Krishna. Devnimori, Amreli were religious sites that produced an ample cultural assemblage of this period. Majority of sites in the region were rich in structural and artifact remains. The urban, small and religious sites were well spread all over the expanse.

In the subsequent period, the extent of sites in the region was not as broad as the post-Mauryan times. Urban sites like Nagara have a long chronology in which the Gupta period strata falls. The excavator terms this as the most prosperous period of the site. Though no large structures are reported from Nagara the artifacts produced in

Gujarat

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze	*		*
Brass		*	
Lead	*	*	*
Gold	*	*	*
Silver	*	*	*
Agate	*	*	*
Amethyst			
Aquamarine Beryl			
Diamond			
Carnelian	*	*	
Chalcedony	*	*	*
Crystal	*	*	
Emerald			
Jasper	*		
Jade	*		*
Diamond		*	*
Pearl			
Ruby	*		*
Quartz	*	*	
Quartz Crystal			
Garnet	*		
Onyx	^		
Rock Crystal	*		
Sardonyx			
Lapis Lazuli	*	*	*
Sandstone	*	*	*
Granite	*	*	*
Steatite	*	*	*
Soapstone	*		
Schist	*		
Quartzite	*	*	*
Marble		*	
Chert	*	*	*
Limestone		*	*
Faience	*		
Coral		*	
Ivory			
Shell	*	*	*

excavations are abundant. Dhatva did not produce structures of this period but the iron smelting industry at all levels indicate that its importance did not diminish. Sites like Prabhas Patan, Timbarva, Jamnagar and Goraj had remains dated to this period. However, structural remains were substantially less. Artifactual yield from them was nevertheless plenty. The many religious sites of the previous phase were not the same in his period. No structural and artifactual remains are reported from Dwarka for this period. Amreli prospered as an important religious site of Buddhist and additionally, Brahmanial structures were unearthed at this stratum. Moreover, the site was a political centre of governance under the Gupta rulers. Its importance continued in this period. Therefore some sites that continued into this period developed into large centers. At the same time, there are sites like Dhatva that did not report elaborate structures compared to earlier times and these seemed to have diminished. In the post-Gupta period, several sites like Nagara, Timbarva, Amreli, Hathab, Shamalaji and Dwarka and most elaborate Valabhi reported structures and brick remains from this period level. Dwarka after a lapse of few centuries revealed a late Gupta period. Other sites in the region were plentiful. Some of the other sites like Devnimori, temple of Gop in Saurashtra-Kathiawar area revealed structures of sixth-seventh centuries besides coins of ruling dynasties and other artifacts. In all, several sites in the region continued from post-Mauryan period to the post-Gupta period. Many of them were urban sites of earlier phases and displayed sprawling remains in the post-Gupta period as well.

Resource-use in the post-Mauryan period was mainly from the site of Nagara. Diverse resources were used at this site. The variety of iron objects at Nagara is profuse. Evidence of manufacture in shell working is seen at Nagara and slag and furnaces are noted at Dhatva, an urban site of this period. The diversity in semi-precious stones is also found at Nagara. These were crystal, carnelian, agate, chalcedony, jasper and jade to name a few. Lapis lazuli beads, a non-local material were found here. Several other varieties of stones were used at the site. Gujarat was a resource rich region and resource-use pattern indicated that most resources like copper, gold, chert varieties of semi-precious stones were available within. For others like steatite, iron, silver, lead, quartz, and garnet the region was dependent on adjoining Rajasthan in the north. Jade and lapis lazuli were both procured from Turkestan and Afghanistan in the northwest. This is a strong indicator of a long distance trade network in the region.

In the subsequent period, the resource-use is plenty at sites like Nagara and Amreli. The use of copper, iron and various stones was profuse but we do not see much diversity in the semi-precious stones as compared to the previous periods. At sites like Amreli, Nagara, and Vadnagar, evidence of shell working is reported from this stratum. Iron slag and related materials were found at Dhatva. The pattern of resource procurement shows that several raw materials especially different varieties of semi-precious stones were used from within as the earlier times. Rajasthan was accessed for lead, silver, steatite and iron. Sandstones were most likely obtained from central India. The link with Afghanistan for obtaining lapis lazuli remained similar, though any further long distant contact was not prevalent in the Gupta period. The nature of resource usage in the post-Gupta period was impressive. Much variety is seen in copper, iron and semi-precious stones. Manufacturing activity is noted at Hathab in shell working and slag strewn on the surface indicated iron smelting activity in the area. The striking point is the diversity of semi-precious stones. The use of diamond is not seen in any other period in this region. This is reported from Hathab, an urban site that grew in this period. Besides, a similarity is seen in resource-use between the post-Mauryan and post Gupta periods. Lapis lazuli is used in all the phases. The resource procurement in this period is similar to the post-Mauryan period with regard to the long distance trade network. As discussed before, a lot of resources and a variety of semi-precious stones, steatite, gold was available within the region. Rajasthan was possibly accessed in this period for lead, silver, granite and sandstone. Afghanistan was accessed for obtaining lapis lazuli in this period as well. Gujarat perhaps was procuring ruby and jade from Karnataka in the Deccan and diamonds from central India. This pattern differed from the earlier periods and indicated the spread of a resource acquisition network in the post-Gupta period.

On the whole, the sites expanse was clear in the post-Mauryan and post Gupta period. The gap in layers at some sites was pronounced in the Gupta period. Also some sites grew in extent by the post Gupta period like Hathab and Valabhi. The resource-use and procurement indicated that the link with Afghanistan was maintained throughout the periods under study. However, the internal procurement pattern was much diversified in the post-Gupta period and reflected the nature of the settlement in the use of exotic raw materials.

Central India

The heartland of the Indian subcontinent comprises this region. It linked the northern provinces to the Deccan peninsula and is marked by several important sites since early times. Many sites of this age were urban in terms of structural remains and cultural assemblages. Maheshwar, Kayatha, Kakrehta, Eran, Ujjain were some of the large sites that revealed structures of houses and planned habitation deposits. Malhar is a site with massive fortification and other structures dated to this stratum. Ujjain is one of the most exalted sites in literature. A multiplicity of other sites is spread in the entire territory where mud and brick houses, coins, pottery, sculptures, and inscriptions have been recovered. Central India is famous Buddhist monastic establishments like the Sanchi stupa belong to this and later strata. The various mounds like Sonari, Bhojpur, Satdhara were groups of stupas located in the vicinity of Sanchi that mark a significant expanse of the Buddhist stupas in the region. Tripuri, Nandur are other sites which revealed stupa, Buddhist viharas and other remains associated with Buddhism.

Between c.300 and 500 AD, Kayatha, Pawaya, Malhar are sites which exposed large structures in excavations. Besnagar, Ujjain, Eran, Maheshwar, Navdatoli , Tripuri, are some of the urban sites in the region that had inscriptions, pottery, sculptures dated to this period. The expanse of the urban sites in the Gupta period was at par with the previous phase. Malhar, an urban-cum-religious site yielded constructions of Buddhist chaityas and viharas. Ninore had habitations of this period and Mandsaur and Piparia revealed a Gupta period temple. Many small sites datable to this period were exposed in explorations. One of them, Sabatpur in Sehore had an enclave of ornament casters. Such industrial clusters are not seen in the post-Mauryan period. The Sanchi stupa in the Gupta period seems to have undergone changes. An inscription carved on the balustrade of the Great Stupa is dated to this period. Pillars in the northern gateway were added in this period. Ruins of several other Gupta period temples were scattered all around the region. It can be understood from the survey that the expanse of settlements in this period was at par with the earlier phase. In the post-Gupta period, habitation was equally well spread as the known from the architectural remains, coin hoards and inscriptions at sites like Kayatha, Besnagar, Tripuri, Pawaya, and Ujjain. Brick structures and layers of habitation deposit were

Central India

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze		*	
Brass		*	
Lead	*		
Gold	*	*	*
Silver	*	*	*
Agate	*		
Amethyst			*
Aquamarine Beryl			
Carnelian	*	*	*
Chalcedony	*		
Crystal	*		
Emerald			
Jasper	*		
Jade	*		
Opal	*		
Pearl		*	*
Ruby			
Quartz	*	*	*
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Saphire	*		*
Sandstone	*	*	*
Basalt	*	*	*
Slate			
Steatite	*		*
Soapstone	*	*	
Hornblende			
Quartzite			
Marble	*		
Chert			
Limestone			
Faience			*
Coral	*		*
Ivory	*	*	
Shell	*	*	

unearthed. Tumain continued as an urban-religious period and revealed cultural material of this period. A new site Pachrahi in Chattisgarh was noted with structural and artifact remains dated to this period. Several other small sites like Gilurikhera, Pagara, Ninnore showed signs of continued habitation upto seventh century AD. However, excavations at Maheshwar Navdatoli indicate that the sites might have been abandoned in the seventh century AD.

Resource-use in the post-Mauryan period was plenty. Diverse semi-precious stones have been used in this period. Like carnelian, agate, carnelian, chalcedony, opal, quartz and sapphire are used. Lapis lazuli is not used in the region which is otherwise commonly found at most post-Mauryan levels. The urbanized nature of the region is further strengthened by the evidences of manufacture using different raw materials. Shell working has been found at Maheshwar and Ujjain had extensive remains of copper and iron workings. Ujjain also has evidence of beads making with waste materials and furnaces. The resource procurement shows that several of the raw materials were available within the region like copper, iron, gold, lead and silver and some varieties of semi-precious stones. The long distance trade in raw materials was a major feature of this period as jade was possibly procured from Turkestan and Afghanistan was accessed for sapphire and ruby. Remains from the post-Mauryan period mark the presence of an exhaustive habitation and resource procurement mechanisms. In the subsequent period, the resource-use was not less than the post-Mauryan period. But the range of resource-use was less. Metals like bronze and brass were used. The diversity of semi-precious stones is less. Excavations exposed a whole colony of ornament casters in Sabatpur in Sehore with several carved dies indicating local manufacture. The resource procurement in this period indicates a local network. Since no raw materials that could be obtained from long distance were used, the procurement was more local in nature. The spread of sites of different categories and their habitational deposits were at par with the earlier period. However a comparison between the two periods shows a wider range of resource-use in the post-Mauryan period. In the post-Gupta period resource-use was even less than earlier. We do not find the use of exotic raw materials in this period. Only shell was possibly procured from the Gujarat coastline. The region however was not far behind in manufacturing activities as evidences of bead making and remains of an iron workshop were exposed in excavations at Pachrahi and Indragarh. The expanse of sites and the well

entrenched habitation is clear from the survey of sites discussed above. Therefore, the high level of urbanization is most evident in structural, artifactual and sculptural remains rather than range of resource-use and resource procurement for the post-Gupta period.

Maharashtra

The region falls in the Deccan area of the Indian subcontinent. Sites with extensive building remains are known from the post-Mauryan period. These are Adam, Kaudinyapur, Brahmapuri, Bhokardan, Mahurijhari among others. Habitation deposits upto several layers besides coins and artifacts and pottery of this period have been found at these sites. Paunar and Ter have yielded Roman amphorae among other finds. Gadchiroli among others have produced massive burnt brick structures. Well known religious sites of the region are Kanheri, Ter, Pauni, Vidarbha that have sprawling stupa complexes and Buddhist viharas. Some of them had manufacturing units dated to this period. The spatial dimensions of sites in this period were extensive. It was a very prosperous phase for the region. In the next period, several urban sites of the region continued. Paunar exposed planned foundations of structures. Bhokardan, Mahurijhari and Pauni flourished as manufacturing zones and as stupa sites. Evidence of Roman contact was seen at Bhokardan. The evidence is in form of bullae, vessels and statue of Posedion in this stratum. Besides the small sites, religious sites like Kanheri continued in this period. Remains of stupa and congregation halls with beautiful carvings on walls and pillars are found. In the post-Gupta period, some changes at the different sites are witnessed. For instance, Prakash, a site with large structures in the previous period reported dilapidated structures from this layer. Kaundinyapura, Bhokardan from the earlier levels revealed diminished structural remains. In contrast, Paunar was thriving with planned foundations and structures in this period. In fact, it has been observed by the excavator that this level dated between the third and eighth centuries AD was a prosperous phase of this site. Sites with Buddhist architectures like Pauni, Paithan, Ajanta, Kanheri, continued to do well. Ajanta caves witnessed the most hectic building activities. It might be assumed that patronage to Buddhism continued in this period and is reflected in the extensive structural remains at these sites in the post-Gupta period.

Resource-use in the post-Mauryan period includes a wide range of raw materials. The variety in semi-precious stones is ample. The prosperity of the region is known from the

Maharashtra

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze		*	*
Brass	*		
Lead	*	*	
Gold	*	*	
Silver	*		*
Agate	*		
Amethyst	*	*	*
Aquamarine Beryl			*
Carnelian	*	*	*
Chalcedony			
Crystal	*	*	
Emerald		*	
Jasper	*	*	
Jade	*		
Opal	*	*	
Pearl	*		
Ruby			
Quartz		*	*
Quartz Crystal	*		*
Garnet	*		
Onyx	*	*	*
Rock Crystal	*	*	*
Sardonyx			
Lapis Lazuli	*	*	*
Sandstone	*	*	
Slate			
Steatite	*	*	
Soapstone	*	*	
Hornblende			
Buff stone	*	*	
Marble	*	*	
Chert	*	*	
Limestone	*	*	
Faience	*		
Coral	*		*
Ivory	*	*	*
Shell	*	*	

evidence of bead manufacture from several sites like Bhokardan, Adam, Kaundinyapura and Pauni. Shell working was also noted at Bhokardan with substantial quantities of waste materials around. Iron smelting industry was seen at Kausan, Paithan, Kanheri and Arni. The resource procurement pattern in this period indicated that several raw materials were accessed from within. Raw materials like lapis lazuli were obtained from Afghanistan; pearls were possibly obtained from Tamil region in the south. Apart from these long distant networks, the region also probably procured garnets from Andhra region and marbles from central India. The use of resources and the procurement pattern certainly indicates the prosperity of the region in the post-Mauryan period. In the subsequent age, the variety of raw materials was less as compared to the earlier period. The urban sites used a variety of semi-precious stones. The evidence of manufacture is seen in this period at Bhokardan and Pauni where beads of crystal and carnelian were found in unfinished state. Mahurijhari emerged as a large bead making site in this period. Iron smelting was found at Kanheri and it possibly continued from the previous period. Shell industry was noted at Paunar.

The resource procurement in the next phase was similar to the previous age. While most resources and semi precious stones were available within, the outside contacts were mainly for procuring marble from central India and lapis lazuli from Afghanistan. In the post-Gupta period, the use of resources was even less. The semi-precious stones were not varied compared to earlier periods. Interestingly, continuation in the manufacture of beads, shell and iron smelting is seen at sites like Paunar, Kanheri and Paithan. The resource procurement indicated that all other resources except lapis lazuli was obtained from within the region. It could be understood as a trend that Afghanistan remained a resource potential for obtaining lapis in all the three periods under study. It might be assumed that by the time of the post-Gupta period the nature of sites underwent a change. Buddhist sites in particular remained prosperous as compared to other sites in the region. The use of raw materials was, however, less. The contact with Afghanistan remained stable since the post-Mauryan period.

Andhra Coast and Plains

The area covers portion of the Deccan Plateau, Eastern Ghats and a large part of the eastern coast of the Indian subcontinent. There are several well known sites in the

region that yield cultural material from the post-Mauryan period. Nagarjunakonda, Pedavegi, Gurapadu, Dharanikota, all exposed elaborate structures and fortifications. Some of the urban sites in the mainland are Satanikota, Peddabankur, Dhulikatta, Nelakondapalli, Kudavelli, Vaddamanu and Veerapuram, Nandyal. Structural remains were noted at most of the sites. Mostly, these yielded coins of ruling dynasties and ceramic remains. Romans coins were found at Dhulikatta, Yaleshwaram which indicated a Roman contact with Andhra. The region has several small sites like Bharatmunipetapadu, Kasipet, Rebbaladevapalli, Rayapatnam, Dommarandandy and Vadaluru. Religious sites with Buddhist affiliation were a prominent feature in this period. Yaleshwaram, Kotilingala, Kesarapalli, Gudivada, Chandravaram, Jaggyapeta, Pishthapura and Phangiri are some such sites that revealed massive Buddhist architectural remains in excavations. These remains include stupas, votive stupas, viharas, chaityas, pillars, platforms and railings.

At Nagarjunakonda, a large *stupa*, four monasteries, citadel and four phases of a grand fortification were exposed. The distinctive feature of the *Mahachaitya* stupa at Amaravati was the veneered casing with limestone slabs over the drum and the dome of the brick built stupa. The numerous Buddhist sites dotting the coastal portion of the region contained extensive building activities of this age. These were Thotlakonda, Bavikonda, Pavuralakonda, Dharapalem, Sankaram, Gopalpatnam, Kottur, Lingarajupalem, Pithapuram, Addurru, Rajamundry, Timmavaram, Salihundam, Ramatirtham, and Mukhalingam and Dantapuram in the Visakhapatnam district. The characteristic features of such sites were the rock-cut cisterns seen at most sites. Therefore, the penetration of Buddhism into the entire region is evident from the density of such sites. In the Gupta period, many sites continued from the earlier period. Peddavegi, Dharanikota, Gopalapatnam, Salihundam, Jaggyapeta, are some of the sites that yielded massive structural remains in this period. Amaravati, stupa of the earlier period yielded sculptures and metal images, coins of Vishnukundin rulers and a few bronze images of the standing Buddha from the Gupta period layers. Remains at Yaleshwaram had more habitational remains. At Kudavelli gold coins of the Byzatium period (4^{th}-5^{th} c. AD) is an important indicator of the continuity of Roman trade in this period. Dhulikatta, Kesareghuttatta, and Pishthapura datable to the fourth-fifth century A.D were fortified sites of this period. As compared to the earlier period, the number of small sites was less. Religious sites, like

Andhra Pradesh

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze	*		
Brass			
Lead	*	*	
Gold	*	*	*
Silver	*		
Agate	*	*	
Amethyst	*		
Aquamarine Beryl	*		
Bloodstone	*		
Carnelian	*	*	
Chalcedony	*	*	
Crystal	*	*	
Emerald			
Jasper	*	*	
Jade			
Opal			
Pearl	*		
Ruby			
Quartz			
Quartz Crystal			
Garnet	*		
Onyx			
Rock Crystal	*		
Sardonyx			
Lapis Lazuli	*	*	
Sandstone	*		
Slate			
Steatite	*	*	
Soapstone	*		
Hornblende			
Quartzite	*		
Marble	*		
Chert			
Limestone		*	*
Faience	*	*	
Coral			
Ivory	*	*	
Shell	*	*	*

Veerapuram and Phangiri, revealed repairs and reconstruction by the Ikshvaku rulers dated between 300 and 400 AD.

In the post-Gupta period, changes were noticed at some sites. Sites with post-Gupta layers exposed varied structural remains. For instance, Yaleshwaram, reported sprawling remains of Buddhist architecture. Structures related to a temple complex were found apart from an apsidal *chaitya* hall and a large hall with limestone pillars. Kudavelli had remains of early Chalukyan temples and brick built shrines. A few sites like Nelakondapalli revealed the remains of stupa from earlier age and new viharas were added to the stupa after the sixth century AD. Kesareghatta, an urban site, had extensive fortifications and structural remains dated to this period. Many of the sites that continued from the previous phase had evidence of repairs and reconstruction in this period. Peddavegi was transformed from a Buddhist stupa site to a Brahmanical temple site where temple remains between the fifth and seventh centuries. Several coins of the Visnukundin rulers were also found. Sites like Rajamundry continued and stupa remains and monastery were dated to this period. Totaravullapadu, Ambadipudi, Daivalarapudu, Dharmavaram, Dhenukonda, Mukteshwaram, Kalavakur and Kondamunjalaru revealed structures and temple complexes of early medieval periods. Jaggyapeta, Ghantasala, Pavuralakonda continued from early times. Dharanikota continued into this period and yielded coins of ruling dynasties, relic stupas, bronze images of Buddha and so on. Nagarjunakonda, the famous Buddhist site of Iskvaku rulers did not continue to this period. A gap in several centuries was noted here. Sankaram transformed into a Brahmanical temple site instead of Buddhist stupa site. Similarly Rajamundhry too yielded Hindu bronzes for this period. Therefore a transformation in the character of several Buddhist sites was a notable feature of this period.

Resource-use in the post-Mauryan period was substantial. Metals like copper and iron as also several semi-precious stones were used such as agate, jasper, opal, bloodstone and carnelian. Manufacturing activity was noted at Puduru where slag was found and a goldsmith's workshop was discovered at Nagarjunakonda. Shell beads and waste materials pointed to the local manufacture of shell objects here. Andhra was itself a region with substantial resources. Therefore, majority of resources were obtained

from within. These were gold, copper, iron, lead, beryl, shell and ivory. For other resources the Andhra coastal region was dependent on neighbouring zones. Lapis lazuli was perhaps obtained through a long distance network with Afghanistan through traditional networks. Crystals were obtained from Karnataka and Tamil Nadu which was also possibly the source for pearls. The prosperity of the region does not reflect so much in the diversity in resource-use. Rather the structural remains at various sites demonstrate the well-to-do nature of occupation in this period. Iron artifacts are profuse at Nagarjunakonda. From the multiplicity of Buddhist sites in the region, it can be assumed that mobility between various Buddhist sites scattered around the subcontinent could have been a means of resource procurement.

Resource-use in the Gupta age was not so diverse. The use of semi-precious stones and the overall resource-use was less. The resource procurement in this period was similar to the earlier phase as several of the raw materials were available within and perhaps the procurement of resources was mostly from within except that lapis may have been obtained from Afghanistan as a trend from the earlier period. We do not have any direct evidence of manufacture in this period but it is known through inscriptions that metal workers were an important class who paid taxes to the king. As such the prosperous condition in the region with elaborate sculptural remains does not match the use of resources in this period. The region had a limited reach for resource procurement. As compared to the earlier periods, resource-use is negligible in the post-Gupta age. Most of the raw materials were used from within. Maximum are found at Peddavegi, a well to do Buddhist site in this period. One can see the substantial use of limestone and sandstone in form of various sculptural and architectural pieces. No evidence of manufacture has been found in this period. Resource procurement indicates that while several of these were available within the region, the semi-precious stones were obtained from Andhra and Karnataka region in the neighbourhood. Lapis lazuli has not been used in this period. The elaborateness of Buddhist sites do not reflect in the resource-use in this period. The pattern was similar to the Gupta period in terms of resource-use and procurement. It is an irony that while the study of remains at different sites exposed massive and extensive building activities, the prosperity is neither reflected in the use nor in the procurement of resources in the region.

Karnataka

A number of early historical sites have been discovered in Karnataka. Chandravalli, Brahmagiri, Hemmige, Maski, T, Narsipur ,Banavasi, Vadgaon-Madhavpur, were some of the sites where structural remains, pottery, coins of the post-Mauryan period were found. At Brahmagiri, Chandravalli, Yaswanthapura, Mysore, Kartyal and Akki Alur, Roman dinarii were discovered. Hasargundigi, a small site has a large stupa dated to this period. Sannathi and Banavasi are religious sites that revealed brick structures and several cells dated to the second-third centuries. Kanganahalli was a famous Buddhist monastic complex of this period. It had a massive stupa and several brick built structures within its boundary. Other stupa sites in the zone are Togarsi in Shimoga district and Hampi in Bellary district. Banavasi, a Buddhist site of the post-Mauryan period, continued to thrive in the subsequent period. Excavations revealed brick structures, fortification, moat, and chaityas. The survey shows that the spatial spread of occupation in the post-Mauryan period is vast. In the following period between c. 300 and 50 AD, sites like Sannathi, T.Narsipur, Brahmagiri, Chandravalli and Vadgaon-Madhavpur do not reveal anything beyond the third century AD. It possibly indicates that these sites did not continue beyond the third century. At the same time, sites like Akki Alur have produced Roman coins dated to fifth-sixth centuries AD. Rajaghatta, Haigunda, Bobruwada, Malaji, Bidarahalli and Bedagaon are sites that have produced votive stupas, chaityas and numerous Buddhist images indicating the presence of Buddhism in this period. Therefore, on one hand, some sites do not continue in the Gupta period, on the other several new sites came up in the region that were related to Buddhism. In the post-Gupta period, Talakad gained prominence as the capital of the Ganga rulers. Inscriptions and temples were discovered from here. Hampi had brick and stone architectural remains of the early Chalukyan rulers of the sixth-seventh centuries. At Sannati, excavations exposed layers dated from early historical to medieval period where art and architectural remains were unearthed. An ancient mine at Pattadakal was discovered where rock material was possibly quarried. Banavasi had remains of dilapidated structures of brick in this period. Besides this, small sites were noted at several places in the region that had structural remains and coins of ruling dynasties of this period. The importance of Buddhism continued in the post-Gupta period as known from sites like

Karnataka

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*		*
Bronze	*		
Brass	*	*	*
Lead	*		
Potin	*	*	*
Gold	*	*	*
Silver			
Agate		*	*
Amethyst		*	*
Aquamarine Beryl	*	*	*
Amber	*	*	*
Carnelian	*	*	*
Chalcedony			
Crystal	*	*	
Emerald	*	*	*
Jasper			
Jade			
Opal	*		
Pearl	*	*	*
Ruby	*		
Quartz	*	*	*
Quartz Crystal			
Garnet	*	*	*
Onyx			*
Rock Crystal	*	*	*
Serpentine	*		
Lapis Lazuli	*	*	
Dolomite			
Sandstone	*		
Slate	*	*	*
Steatite		*	*
Soapstone	*	*	
Mica			
Quartzite		*	*
Marble	*		
Fuchsite			
Limestone			
Faience	*	*	*
Coral	*	*	*
Ivory			
Shell			

Aihole, Badami and Melkote that exposed architectural remains associated with Buddhism. At Aihole, a double storied Buddhist vihara was discovered from this level. Buddhism perhaps enjoyed the patronage of local ruling dynasties in the region. For instance, at Melkote, a reference to the gift of land to a Buddhist vihara by a Ganga ruler is known. The post-Gupta period remains show that various sites in this period were patronized by different local dynasties that ruled in separate portions of the entire Karnataka region between 500 and 800 AD. This is more amply demonstrated by the structural remains at various sites discussed above.

Resource-use in the post-Mauryan period was substantial. A variety of raw materials were used especially in semi-precious stones and ordinary stones. Iron smelting furnaces, equipment and slag were found at Talakad and Banahalli. Bead making was a local industry at Banavasi where waste flakes and nodules of different semi-precious stones were found. A coin mould was also discovered from Banavasi and from Talakad respectively. It indicates local manufacturing set ups in this period. The kiln discovered at the latter site was the first of its kind from Satavahana levels. Raw material usage indicates that metals and a variety of semi-precious stones and limestone were obtained from within the region. The resources procured from outside were steatite from central India, and lapis lazuli from Afghanistan. In the Gupta period, the resource-use is at par with the earlier period. The variety of semi-precious stones in the region is abundant. Iron slag and design moulds are found as evidence of manufacture from Gudnapur and Banahalli. Karanataka is a resource rich region and most of the metals and different varieties of raw materials were found from within the region. Only lapis lazuli was possibly obtained from Afghanistan during this period. In the subsequent period, we find ample use of resources. Semi-precious stones like fuchsite, serpentine, jade, and amber were used in the earlier periods as well. Mica was used in the Gupta-post-Gupta periods. Lapis lazuli has a presence in all the three periods. A gold smith's design bar was found at Gudnapur signifying that manufacturing activities continued in the post-Gupta period as well. The pattern of resource procurement points that most of them were available within and were accessed similarly as in the earlier periods. The region was possibly procuring lapis lazuli from Afghanistan continuing the trend from earlier phases. In this period, amber was available in Kerala and perhaps obtained from there and serpentine from possibly from Andhra region. The post-Gupta

levels in the region indicate a strong influence of local ruling dynasties in different parts. This is amply seen in the emergence of new sites. The resource usage shows varied use and possibly indicates the contact with neighbouring and as well as distant lands for procurement of raw materials like lapis lazuli.

Tamil Nadu

The region had a prosperous phase under the rule of the Sangam Cholas between the late centuries BC till about the third century AD. The urban sites in the region dated to this period are Kaveripattinam, Arikamedu, Kodumanal and Karaikadu. A celebrated port town of the Sangam Cholas was Kaveripattinam or Pumpuhar. It was a prominent site in this period. Excavations have revealed long cultural periods from the early historical to the early medieval period. Vanagiri, Kalaiyur, Pallavanesvaram, Uraiyur are some of the sites with large structural remains among others. Evidence of Roman contact in this period has been discovered at the sites of Arikamedu and Karukkakurichi. The presence of Arrentine ware, Roman gems and amphorae at Arikamedu amply substantiate the trade relation between the Tamil land with the Romans. The region is rich in sites of different categories and their multiplicity is known through the artifact assemblage. Kanchipuram is a site with elaborate Buddhist shrines and chambers. What is interesting is the presence of a few Jain centres like Tirrupattiripuliur in Cuddalore, Aivarmalai in Dindugal district, Dharapuram in Erode district among others in Tamil Nadu. In the subsequent period, Pallavanesvaram, Pallavamedu and Kanchipuram continue to thrive. Buddhist sites were revealed from the structures and sculptures of the Buddha recovered from there. Sites like Tikkampuliyur, in the period between third to tenth centuries AD had a spurt of building activities. Numerous small sites like Alagarai, Perur, Adiyamanakottai, Korkai and Alagankulam continued into this period. Most of them produced inscriptions of this period and artifactual evidence like coins, rouletted ware and so on. Roman coins of the fourth century A.D. have been found at other sites in Tamil Nadu. They are Thanjavur, Mamallapuram, and Madurai. The plethora of urban, small and religious sites that continued from earlier period is many. The extensiveness of habitation is also amply demonstrated.

The sites with occupational layers of the post-Gupta period are Uraiyur, Tikkampuliyur, Pallavamedu, Perur, Adiyamanakottai and Kanchipuram. Rammed clay flooring and

Tamil Nadu

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*	*	*
Iron	*	*	*
Bronze			
Brass			
Lead		*	
Gold	*	*	*
Silver	*		
Agate	*	*	*
Amethyst	*	*	*
Aquamarine Beryl	*	*	
Carnelian	*	*	*
Chalcedony	*	*	
Crystal	*	*	*
Emerald			
Jasper	*	*	*
Jade			
Opal	*		*
Pearl			
Ruby		*	*
Quartz	*	*	
Quartz Crystal	*		
Garnet		*	*
Onyx			
Rock Crystal	*		
Sardonyx	*		
Lapis Lazuli			
Sandstone	*		
Slate			
Steatite	*		*
Soapstone	*	*	
Granite	*		
Quartzite			
Marble			
Chert			
Limestone			
Faience			
Coral	*		
Ivory	*		
Shell	*	*	*

rammed brick floors were found at Uraiyur. At Tikkampuliyur large scale building activity is noted in this period. Kaveripattinam revealed a massive monastic structure and cells and related structures dated to this period. Ramanathapuram was a port on the east coast between 500 and 1200 A.D. Excavations revealed various stages of occupation in this period. Pottery and brickbats were found in excavations here. Perur had remains of habitation, pottery, and an emblem of the ruling authority from this period. Several sites in the region had stratum dated between 500 and 1200 / 1400 AD. Pallavamedu and Mamalapuram had structures and sculptures dated between fourth and ninth centuries AD. These were fine examples of Pallava art in the style of rock cut monolithic temples dated to this period. The profusion of sites in the post-Gupta period in the Tamil region indicates the prosperous condition in structural and sculptural remains.

Resource-use in the post-Mauryan period shows that most raw materials were used at the sites in this period. But the variety in semi-precious stones is lacking. Most of the materials have been recovered from the urban and religious sites. The expanse and prosperity of the region is evident in the various manufacturing activities noted at different sites. At Arikamedu, Karaikadu and Kodumanal, extensive evidence of beads manufacturing is reported. Iron smelting activity is reported at Kodumanal, Perur, Modur and Gutturmalai in form of furnaces, slag and pipes. Shell working has been known from Arikamedu where waste materials and unfinished bangles have been found. The resource procurement in the region indicates that many raw materials were available within and were used. At the same time, several varieties of agate and chalcedonic silica were procured from neighbouring Karnataka. It can be inferred from the study that the region was dotted with important and growing political centers, manufacturing hubs and religious activities in the post-Mauryan period. Its resource-use and procurement pattern indicate the full utilization of its resource in the post-Mauryan period.

In the Gupta period, the number of resources used was less in comparison to the earlier period. There is, though, variety in the use of semi-precious stones. Most of the artifacts are found at urban and religious sites. Manufacturing activities are much reduced than earlier period. Shell working is noted at Kanchipuram and Tikkampuliyur and bead making is found at Tikkampuliyur. The pattern of resource procurement was similar to

the earlier phase. Most of the resources were available within and few varieties of quartz, jaspers and agates were obtained from neighbouring Karnataka.

In the following period, we find minimal use of resources in comparison to the previous periods. Shell working is seen at Tikkampurliyur that continued from the previous phase. Bead making was noted at Vadavur in Chingleput district. Iron smelting activity is seen at Palur in Kanchipuram. The resource-use pattern was at par with the earlier periods as most of the resources were obtained from within. Karnataka was the resource region for obtaining certain varieties of semi-precious stones.

On the whole, the spread of settlements in all the three periods was broad. In the Gupta-post-Gupta periods, the spread of sites show the continuation as well as emergence of many sites. The influence of ruling powers on temple building is very clear at sites like Mammalapuram apart from the discovery of coins and inscriptions of ruling dynasties from many other sites.

Kerala

The region is more abundant in megalithic sites than early historical sites between the late centuries BC and early centuries AD. The megalith period has a long chronology from 1000 BC and 1000 AD. Hence, the three periods of our study is broadly covered by the megalithic period in the region. Porkalam and Cheramangar in Trichur district, Kuppakolli in Wynad district, Naduvil in Kannur district are some of the sites that are megalithic burial sites. Pattanam near the Peryar river is the only early historical site discovered in the region in recent times. It yielded structures and artifacts of the period between c.300 BC and 500 AD. The significance of the site was the find of Roman amphorae and pottery remains and rouletted ware. This was perhaps the first evidence of Roman contact on the western coast of the Indian subcontinent. Roman coins have been found at several sites in the region like Kottayam (Kurumbranad), Eyyal (Trissoor), Valluvally (Parur), Kizhalur, Edamaruku (Pala), Punjar, Niranam and Panangad. This clearly points to the significance of this region in the post- Mauryan period. In the period between 300 and 500 AD, we do not find any sites with cultural material from this period. Whatever little information we get is through epigraphs and in particular the

Kerala

Raw Materials	c. 200 BC to 300 AD	c. 300 to 500 AD	c. 500 to 750 AD
Copper	*		*
Iron	*		*
Bronze			
Brass			
Lead			
Gold	*		
Silver			*
Agate	*		
Amethyst			
Aquamarine Beryl			
Carnelian	*		
Chalcedony			
Crystal			
Emerald			
Jasper	*		
Jade			
Opal			
Pearl			
Ruby			
Quartz			
Quartz Crystal			
Garnet			
Onyx			
Rock Crystal			
Sardonyx			
Lapis Lazuli			
Sandstone			
Slate			
Steatite			
Soapstone			
Granite	*		
Feldspar	*		
Marble			
Chert			
Limestone			
Faience			
Coral			
Ivory			
Shell	*		

donative records of merchants and traders visiting the west coast. The numismatic evidence is in the form of Roman coins at Karur that was ruled by the Chera rulers. Interestingly, the 'Republican' issues of fourth-fifth centuries AD are found from sites in Tamil Nadu indicating a shift in the Indo-Roman trade of early centuries AD to the east coast. Recent excavations have brought to light the early historic site of Pattanam in the region. Valluvally in Ernakulam district is another site that has yielded Roman coins from the early historical period. The evidence of habitation in the region is extremely meager. Epigraphic evidence in the region indicates a shift from the trade centric set up to wet land agricultural pattern of life. The primary evidence for this is a brahmadeya land record in the region dated to the fourth century AD. More archaeological evidence is needed for understanding of this region in the period between 500 and 800 AD.

The survey of sites in the Kerala region indicates that beyond the early historic period, the evidence of habitation is hardly known from study of conventional sources like structural remains, artifacts, pottery and any other cultural material. A critical study of inscriptions of the period between third and eighth centuries AD perhaps holds some clue to the way of life during this age.

In conclusion, what emerges from the survey that I have undertaken in my thesis is that if there is an all-India pattern in resource-use and resource procurement, it is primarily in the first phase that one sees such a configuration i.e., immediately after the demise of the Mauryan empire and continuing into the early centuries AD. From the Gupta period onwards, however, instead of a similarity across the Indian subcontinent, there are regional variations. If there are some regions which saw a shrinking trade network in the Gupta period, there were others which were marked by much prosperity. In much the same way, in the post-Gupta centuries, there is no uniformity in the range of artifacts found or in the raw materials that were used. What is, however, striking is that there were certain long-distance trade networks that continued to flourish across the centuries. The movement of lapis lazuli across India is an indicator of this as is the presence of pearls and these are exemplifiers of the continuities that mark the time period that forms the basis of this study.

A similar pattern, incidentally, can also be seen with regard to the settlement pattern and the nature of sites. There are many regions marked by flourishing settlements in the

Gupta period, a few of which did not show a similar burgeoning of sites in the post-Mauryan phase. In the post-Gupta period as well, there are regions marked by sites that show signs of degeneration but there are others where the spread was impressive. Clearly, large subcontinental political formations are not a necessary condition, as my study shows, for understanding the pattern of trade and/or the pattern of settlement expansion and contraction. What were the factors at the level of the region which impacted on the economy need to be understood more carefully, but that is beyond the scope of this work.

NOTES TO CHARTS -CHAPTER 2

1a: Taxila: Marshall, 1951: 482-760; A.I. no.4, 1947-48: 72, 1978-80; AI. no.9, 1953: 132; A.R.A.S.I. 1912-11: 26-28, 32; 1915-16: 5, 20, 29; 1919-20: 18-20; 1923-24: 63-66; 1924-25: 49; 1926-27: 113-19; 1935-36: 35; Charsada: A.R.A.S.I. 1902-03: 143-59, 172; Shahri Bahlol: A.R.A.S.I. 1911-12: 102, 109, 117; 1935-36: 134; Shah-ji-ki-Dheri: A.R.A.S.I. 1907-08: 56; 1910-11: 29; Jamalgarhi: A.R.A.S.I. 1920-21: 25; Jarahi: P.A. 1967: 1; Bagar: P.A. 1967: 3. Rokhari: A.R.A.S.I. 1925-26: 58-59; Zaro Dheri: A.R.A.S.I. 1922-23: 87; Adnandheri: A.P. 1968-69: 41; Thareli: Dani 1988: 82. P.A. 1967: 153; Ishpola: A.R.A.S.I. 1922-23: 100; Amankot: A.R.A.S.I. 1922-23: 160; Manikyala: Dani 1968-69: 164-66; PA 1970-1: 18-22; Sanghao: A.P. 1964: 15; Shaikhan-dheri: A.P. 1965-66: 23-134; Damkot: A.P. 1968-69: 143; Haripur: A.R.A.S.I. 1930-34: 314.

2a: Semthan: Gaur, Vol. 1: 333; I.A.R. 1980-81: 23; Pande and Chattopadhyaya 1987: 331-33; Kairi: I.A.R. 1980-81: 25; Marjali: I.A.R. 1980-81: 26; Thath: I.A.R. 1980-81: 26; Partara: I.A.R. 1980-81: 26; Nargara: I.A.R. 1980-81: 26; Manda: I.A.R. 1976-77: 21; Kansipur: I.A.R. 1998-99:40. Pragdhara 1999-2000: 7-17; Kansipur: I.A.R. 1998-99:40; Pragdhara 1999-2000: 7-17; Guru Baba Ka. Tibba: I.A.R. 1997-98: 64; Srinagar: I.A.R. 1967-68: 62; Ambaran: I.A.R. 1999-2000: 63; I.A.R. 2000-01: 59-60; Pragdhara 2000-01: 51; Harwan: ARASI 1921-22:92.

3a: Mirpur Khas: A.R.A.S.I. 1909-10: 85; Mohenjo-Daro: A.R.A.S.I. 1922-23: 103; Luni Mound: P.A. 1964: 13; Jhukar: A.R.A.S.I. 1927-28: 83; Tharo Hill: M.A.S.I. 1999: 33.

3.1a : Jarahi; PA 1967: 1; Bagar PA 1967: 3; Tulumba: P.A. 1967: 3; 130-151;

4a: Mastung: M.A.S.I: 1998: 12; Tor Dherai: M.A.S.I. 1929: 67-68; Ark Ghundai: M.A.S.I. 1929: 15.

5a: Kashipur: I.A.R. 1965-66: 53; Virbhadra temple: I.A.R. 1973-74: 29; 1974-75: 29 ; Muni ki Reti : I.A.R. 1975-76: 74; Bharat Mandir: I.A.R. 1982-83: 96;

Panduwala: I.A.R. 1982-83: 99 ; Ratura: I.A.R. 1988-89: 87 ; Khanduri 1994: 204; 1988-9: 87 Purola: I.A.R. 1988-89: 89 ; Dat Nagar: I.A.R. 1992-93:36; Tehri Garhwal: I.A.R. 1972-73: 57; Lachori: I.A.R. 1970-71: 61; Chetru I.A.R. 1996-97: 32; Okhru: Kaushal 1988:16 ; Ranihat: Khanduri 1994: 34; ed. Banerjee 2006: 391-6; Jagatgram: Agarwal and Kharakwal 1998: 154.

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NOTES TO CHARTS –CHAPTER 3

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2: 70; Bhawar: IAR 1991-2: 62; Arambha: IAR 1991-2: 74; Irla: IAR 1989-90: 69; Tharsa: IAR 1989-90: 67; Gadchiroli: IAR 1989-90: 65; Adam: IAR 1988-9: 59; 1990-1: 49-50; Nasik: IAR 1982-3: 131; Bhagi Mahari: IAR 1982-3: 62; Mandhal: IAR 1975-6: 36; Ranjangaon: IAR 1974-5: 65; Malhar: IAR 1974-5: 22; Paithan: IAR 1979-80: 97.

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NOTES TO CHAPTER 4

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NOTES TO CHAPTER 5

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13c Kanheri: IAR 1969-70:58; Hamalapuri: IAR 1982-83: 131; Prakash: AI 1964-5: 105-129; Thana: ARASI 1923- 229; Paunar: IAR 1989-90: 121; Mansar: IAR 1994-5: 71; Kausan and Paithan: IAR 1965-66: 29; Bhandara: IAR 1976-7: 72.

14c Kayatha: Ansari and Dhavalikar 1975: 115-15; Tumain: IAR 1971-2: 28; Malhar: Sharma and Mishra 2003: 135; IAR 1974-5:22; Pagara: IAR 1980-81:33; Gilaurikhera: Sharma and Mishra 2003: 109-110; Ujjain: IAR 1968-69:60; Gilaurikhera: IAR 1981-2: 34; Sikri: Purattatva 2000-01; 58; Sirpur: IAR 1999-2000: 110-6; Tripuri: Sharma and Mishra 2003: 162-3; IAR 1967-8: 24; Indragarh: Sharma and Mishra 2003: 184; Pachrahi: Purattatva 2008: 52; Tumain: IAR 1971-2: 28; 1972-3: 16.

15c Amarabad: IAR 1968-9: 58; Dachapalli: IAR 1989-90: 1; Nellakondapally: IAR 1977-78: 3; Nelakondapalli : IAR 1993-4:3; IAR 1977-8: 3; Kudavelli:

IAR 1978-79: 39; Yaleshwaram: IAR 1960-1: 3; Amaravati: Babu 1999: 25; Sarkar and Nainar 1972: 16-17.

16c Peddavegi: IAR1984-5: 5; Sarma 2002: 32-108; Pavuralakonda: IAR 2001-02: 12; Peddakonduru; Salihundam Subramanyam 1994: 22.

17c Talakad: IAR 1995-6: 42 and; Devaraj, Murthy and Swamy 1996: 57-265; Honnudiker: IAR 1978-79: 97; Hampi: IAR 1983-4: 38; 1984-5: 28; 1990-91: 29; Gudnapur: IAR 1990-91: 32.

18c Uraiyur: IAR 1965-66:26; Pallavamedu: IAR 1970-1:33; Pallavamedu: ed. Sridhar 2004: 58; Perur: IAR 2000-01: 230; Perur: IAR 2001-02:230; Kanchipuram: IAR 1974-5: 38; Adiyamanakottai: IAR 1980-1: 65; 1981-2: 63; Tkkampuliyur-: Mahalingam 1970:51-53; Alagarai: Mahalingam 1970: 106-8; Alagankulam IAR 1990-91: 68.

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ABSTRACT of Ph.D Thesis

SETTLEMENTS, RESOURCE USE AND PATTERNS OF COMMUNICATION

IN EARLY INDIA C. 200 B.C. -750 A.D.

by

Shakti Chakrabarti

This dissertation examines the resource-use and resource-access of settlements in early India so as to outline patterns of communication from the 2nd c. BC till about the 8th c. AD. It does this by mapping a range of raw materials – including precious and common metals, varieties of semi-precious and ordinary stone, shell and ivory – that were used at different sites. The evidence is mainly in the form of manufactured objects and, occasionally, evidence of manufacture of such objects there. Additionally, the sites have been analyzed in terms of their structural remains and have been categorized into urban, religious and other kinds of settlements. All this evidence is then interwoven to understand the pattern of communication in historical India.

Therefore the focus of this study is on the following:

a. Nature of resource use in a region

b. Patterns of exchange among different regions

c. Survey of sites in the three periods (C. 200 BC to 300 AD; 300-500 AD and 500-750 AD) to understand their continuity and nature

d. Analysis of the nature of resource use and pattern of exchange which indicate the prevailing patterns of communication during the three periods i.e. between c. 200 BC - 300 AD; 300-500 AD and 500-750 AD.

SCOPE AND METHODOLOGY

The sources I have used for this purpose are mainly excavation reports and explorations. Various archaeological publications have been studied to understand the use of different resources in manufactured form and also the evidence of manufacture there. The types of raw materials I am looking at are mainly metal and stone artifacts. This in turn is linked up with a simultaneous exploration of the natural sources of these raw materials whether local or non-local on the basis of Geological Survey of India publications and district gazetteers. It has helped to establish definite links between different regions especially outside the different geographical zones.

The correlation of the possible sources for the raw materials that were used, apart from the presence of the raw material, has been mainly established on the basis of inscriptional, numismatic and literary data. Such evidences found outside the specified geographical limits have been considered to substantiate the connections between different regions. Such links are helpful in determining the pattern of communication that developed in different periods of Indian history. The raw material distribution is graphically represented by a large number of charts and maps.

CHAPTERIZATION

The total number of chapters in the thesis is six. The chapterization is as follows:

Chapter 1 – Introduction

Here, I elaborate on the scope and methodology of the study. Also I provide an overview of the historiography and the previous work done on the subject of raw material usage and patterns of communication and settlements.

Chapter 2- Early India from Northwest till Orissa (c. 200 BC to 300 AD)

I begin the discussion with the northwest province till Orissa for the post-Mauryan period. The areas of study broadly cover the hilly regions of Jammu and Kashmir, Himachal- Uttarakhand, Indo-Gangetic divide and Punjab plains, the Upper, middle and lower Gangetic plains, the northeastern hills and Orissa.

Chapter 3- Early India from Central India till Kerala (c. 200 BC to 300 AD)

As a continuation of chapter 2, this chapter covers the regions of central India, and Peninsular India consisting of the Deccan region and the southern states till Kerala for the post-Mauryan period.

Chapter 4- Period of the Guptas and other contemporary rulers (c. 300 to 500 AD)

In this chapter, I look at all the archaeological sites in the Indian sub-continent in a region-wise pattern that belong to the period between c.300 and 500 AD corresponding to the time of the Gupta rulers and their contemporaries in different parts.

Chapter 5- The post-Gupta period (c. 500-750 AD)

This chapter studies the archaeological sites all over the sub-continent in a region-wise manner and focus on the data that is dated to the post-Gupta period between the c. 500 and 750 AD.

Chapter-6- Summary and Conclusion

This chapter outlines the parameters on which the conclusions have been drawn. First, it gives a comparative summary of all the three periods on resource use and procurement pattern and the nature of settlements in each period for each region. This is followed by the conclusions drawn on the basis of the comparison on grounds of resource use, procurement pattern and nature of sites and settlements in each period.